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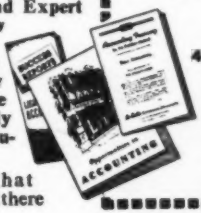

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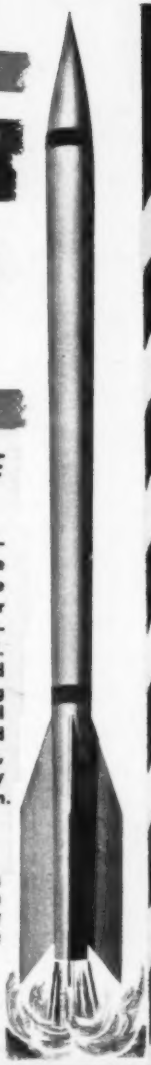

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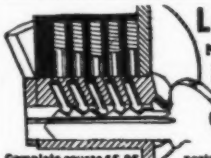

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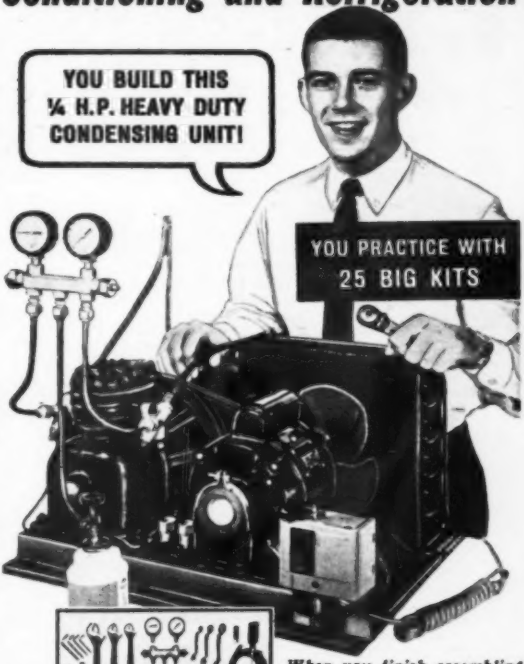

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By Victor B. Mason

I am printing my message in a magazine. It may come to the attention of thousands of eyes. But of all those thousands, only a few will have the vision to understand. Many may read; but of a thousand only you may have the intuition, the sensitivity, to understand that what I am writing may be intended for you—may be the tide that shapes your destiny, which, taken at the crest, carries you to levels of independence beyond the dreams of avarice.

Don't misunderstand me. There is no mysticism in this. I am not speaking of occult things; of innumerable laws of nature that will sweep you to success without effort on your part. That sort of talk is *rubbish!* And anyone who tries to tell you that you can *think* your way to riches without effort is a false friend. I am too much of a realist for that. And I hope you are.

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I Have All The Money I Need

In my own life I have gone beyond the need of money. I have it. I have gone beyond the need of gain. I have two businesses that pay me an income well above any amount I have need for. And, in addition, I have the satisfaction—the deep satisfaction—of knowing that I have put more than three hundred other men in businesses of their own. Since I have no need for money, the greatest satisfaction I get from life, is sharing my secret of personal independence with others—seeing them achieve the same heights of happiness that have come into my own life.

Please don't misunderstand this statement. I am not a philanthropist. I believe that charity is something that no proud man will accept. I have never seen a man who was worth his salt who would accept something for nothing. I have never met a highly successful man whom the world respected who did not sacrifice something to gain his position. And, unless you are willing to make at least half the effort, I'm not interested in giving you a "leg up" to the achievement of your goal. Frankly, I'm going to charge you something for the secret I give you. Not a lot—but enough to make me believe that you are a little above the fellows who merely "wish" for success and are not willing to sacrifice something to get it.

A Fascinating and Peculiar Business

I have a business that is peculiar—one of my businesses. The unusual thing about it is that it is needed in every little community throughout this country. But it is a business that will never be invaded by the "big fellows". It has to be handled on a local basis. No giant octopus can ever gobble up the whole thing. No big combine is ever going to destroy it. It is essentially a "one man" business that can be operated without outside help. It is a business that is good summer and winter. It is a business that is growing each year. And, it is a business that can be started on an investment so small that it is within the reach of anyone who has a television set. But it has nothing to do with television.

This business has another peculiarity. It can be started at home in spare time. No risk to present job. No risk to present income. And no need to let anyone else know you are "on your own". It can be run as a spare time business for extra money. Or, as it grows to the point where it is paying more than your present salary, it can be expanded into a full time business—overnight. It can give you a sense of personal independence that will free you forever from the fear of lay-off, loss of job, depressions, or economic reverses.

Are You Mechanically Inclined?

While the operation of this business is partly automatic, it won't run itself. If you are to use it as a stepping stone to independence, you must be able to work with your hands, use such tools as hammer and screw driver, and enjoy getting into a pair of blue jeans and rolling up your sleeves. But two hours a day of manual work will keep your "factory" running 24 hours turning out a product that has a steady and ready sale in every community. A half dollar spent for raw materials can bring you six dollars in cash—six times a day.

In this message I'm not going to try to tell you the entire story. There is not enough space on this page. And, I am not going to ask you to spend a penny now to learn the secret. I'll send you all the information, free. If you are interested in becoming independent, in becoming your own boss, in knowing the sweet fruits of success as I know them, send me your name. That's all. Just your name. I won't ask you for a penny. I'll send you all the information about one of the most fascinating businesses you can imagine. With these facts, you will make your own investigation. You will check up on conditions in your neighborhood. You will weigh and analyze the whole proposition. Then, and then only, if you decide to take the next step, I'll allow you to invest $15.00. And even then, if you decide that your fifteen dollars has been badly invested I'll return it to you. Don't hesitate to send your name. I have no salesmen. I will merely write you a long letter and send you complete facts about the business I have found to be so successful. After that, you make the decisions.

Does Happiness Hang on Your Decision?

Don't put this off. It may be a coincidence that you are reading these words right now. Or, it may be a matter that is more deeply connected with your destiny than either of us can say. There is only one thing certain: If you have read this far you are interested in the kind of independence I enjoy. And if that is true, then you must take the next step. No coupon on this advertisement. If you don't think enough of your future happiness and prosperity to write your name on a postcard and mail it to me, forget the whole thing. But if you think there is a destiny that shapes men's lives, send your name now. What I send you may convince you of the truth of this proverb. And what I send you will not cost a penny, now or at any other time.

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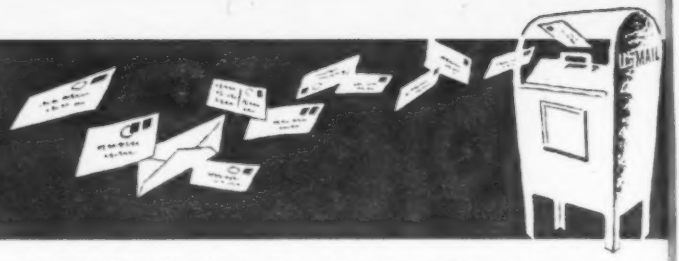

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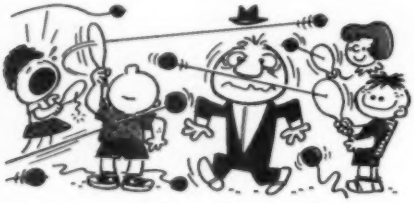
● *Ask Us Anything*



Whenever my kids get a paddleball we have floods of tears because they break right away. How do you smart alecs handle that one?

May Worsley
Pittsburgh, Pa.

If the elastic breaks where you can knot it, knot it. If it breaks too near the ball for that, put a piece of string through the ball with a large needle, knot one end so it can't pull through, and make a loop in the other end. Now you have a permanent loop on which to tie the elastic. If the elastic breaks at the staple on the paddle, pull out the staple and drill two holes in the paddle to pass elastic through and tie. With this setup repairs are easy.

● *Intrepid Clammer*

Who can use beautiful, many-colored fresh water clam shells, hand-cleaned and hand-gathered from alligator-infested waters? I can supply as many as anyone needs.

Allan Mason
Haverhill Trailer Ct.
West Palm Beach, Fla.

Well, here's your chance, all you fresh-water clam shell lovers!

● *Is It Really Wanted?*

I see by the Aug. Inventions Wanted page that someone out in the Cornhusker State has the idea of a pocket telephone alarm that will tell you the phone is ringing when you're out of earshot. The Bell Telephone people should be glad to know that this particular Invention is Wanted. They've been trying to sell a similar gadget for a long time.

Sol Morton
Philadelphia, Pa.

● *Kangaroo Car Collectors*

In Oct. '59, page 81, you mention a 1904 Daimler, restored, as the only one known to exist. Not so. A member of the Wonganui Vintage Car Club here in N. Z. owns one. Another "only" mentioned some time ago was a Smiths Flyer. A friend of mine owns one in perfect running order and also owns a running 1898 Locomobile.

Lew Fieldsend
Auckland, N. Z.

● *Is Oxygen Necessary?*

On page 159, Aug. MI, it says city air is so dirty it's better to recirculate the air in a building than to draw outside air into the air conditioning system. Don't they need oxygen to breathe?

J. T. Thomas
El Paso, Texas

Do city people breathe? The item said a minimum of outside air should be used.

[*Continued on page* 20]

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Dear Editor

[*Continued from page* 18]

• *Concrete And Rain*

I have never laid concrete before and I'm loading up on how-to instructions from various sources. One thing keeps worrying me. Can concrete be laid in the rain?

J. T. Buchman,
Buffalo, N. Y.

Damp weather can actually help fresh concrete, which dries harder for not drying too fast. You can pour concrete underwater, in fact, if it is relatively still water.

• *Tree Trouble*

My bride keeps singing weird versions of familiar ditties. I love her but this is beginning to get me. Now it's, "The old gray mare she kicked up the appletree." I don't know this song but I know enough to know *that* can't be right. Can it?

Troubled Young Married,
Chicago, Ill.

The line is "kicked out the whiffletree." Your bride may be doing this on purpose. Your best bet is to find some little thing to do that annoys her, like cracking your knuckles or saying "Ho-hum."

SCIENCE SHORTIES

NEW highways wear tires up to three times faster than well-worn roads because older surfaces become coated with a smooth layer of dirt, oil, tar and rubber.

It is estimated that 60,000,000 pages of scientific reports will be published in the technical journals of the world in 1960.

After a single, moderately severe sunburn the blood vessels are abnormal from four to 15 months.

It is estimated that for every mile walked, 250 tons of stress are put upon the feet.

A new tablecloth is treated with a chemical that makes the fabric repel water and oil-borne stains.

The peel of an orange contains more than 300 different chemical compounds.

According to a new U.S. Air Force Lunar map, the surface of the moon is no more rugged than that of the earth.

The fresh water needs of the U.S. will exceed the natural supply by 85 billion gallons a day within 20 years.

Formosa, 240 miles long and about the size of Maryland and Delaware combined, sustains some 10,000,000 people.

Fabrics to be used for re-entry parachutes in manned satellites may be woven from fine wire composed of nickel-chromium and cobalt-chromium alloys.

The first completely new method of using wood to be developed since the time of Julius Caesar was the wholesale manufacture of plywood.

Each day there is a gain of about 10,000 people in the U.S.

An electronic instrument has been built at the Massachusetts Institute of Technology to detect art forgeries.

Ordinary sea winds may carry ten to 100 pounds of salt per cubic mile of air, while storm winds carry 1,000 pounds or more.

The Ghibli is a blistering-hot south wind blowing from the Sahara, at 35 mph, into Tripoli, where 135° F. temperatures occur in the summer.

An object, such as a bomb, if dropped from a satellite, would travel along with the satellite in orbit unless it was aimed and propelled.

It takes about 2.8 board feet of wood to make a dozen pencils.

A team at Cambridge University in England has developed a new 3-D microscope which produces a solid image. •

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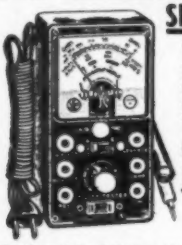

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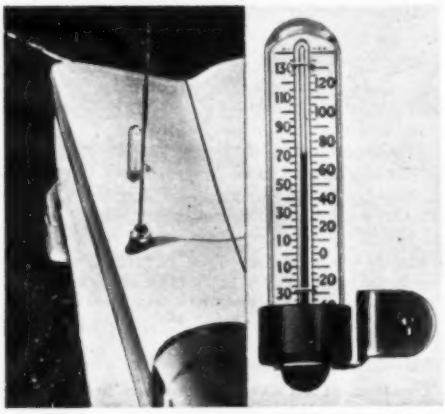

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NEW SOLES for shoes and hunting boots, developed by International Shoe Co., St. Louis, Mo., will outlast the uppers, makers claim. Actually, the product is a vulcanizing process that permits direct attachment of sole to upper and allows use of high-quality rubber. There are no stitches to break and the shoe or boot is completely waterproof. Soles will retain design markings for 12 months of steady wear, last as long as a 70,000-mile tire. Process may be used on children's steady-use footwear.

PATENTS GRANTED

THE machine age has come to the aid of seaweed and Irish moss pickers, thanks to Earl C. Jertson of Fairhaven, Mass., who was granted patent 2,941,344 for a machine capable of detaching large quantities of Irish moss from the sea floor and bringing it to the surface. Up to now, these plants had to be harvested by hand.

A more lethal arrow got patent 2,940,759 for Leo J. West of Comstock Park, Mich. The arrow is made so that the shaft slides into a socket in the head. One or more percussion caps are inserted between the shaft and the head. The arrow's impact explodes these caps to drive the head deeper into the target.

A method of fitting jet planes with turbine-driven fans set in the wings so that aircraft can hover won patent 2,940,689 for Alun R. Howell of Cove, Farnborough, England. Rights to the invention were assigned to the British government.

Inventor William J. Swanson of Fairview, N.J. was awarded patent 2,939,125 for a device "to visually indicate by day and by night in tidal waters, whether the tide is incoming, outgoing or at a turn, and its approximate stage."

Pipe smokers can thank Carl F. Ackerbauer of Johnstown, N.Y. for developing a new method of packaging tobacco in a cartridge that fits into the pipe bowl. The device took patent 2,935,987.

A new type of foldable hardtop for cars, powered by an electric motor, enables the whole top to be folded down and stored in the trunk. Inventors Harry B. Dardarian of Oak Park, Joseph H. Gilson and Gordon R. Swanson of Detroit, Mich., were given patent 2,939,742 for the invention. Rights were assigned to General Motors.

Electroluminescent materials for the home are a step nearer with the invention of Jacques M.N. Hanlet of Paris, France. He was awarded patent 2,936,252 for a method of depositing electroluminescent crystals onto a desired base.

A folding high chair by Abba Miller of Cleveland, Ohio, that clamps on an ordinary chair and can be adjusted in height, was granted patent 2,935,122. The chair's tray is designed so that spilled liquids are trapped inside the tray but Junior can still get his hands on any spilled food.

Dimitrij Oleksij of East Orange, N.J. took patent 2,941,763 for a device designed to slow one's fall from an aircraft or high building. The invention consists of two autogyro-like rotors mounted one above the other on a central cylindrical column and allows the user to control the direction of descent. •

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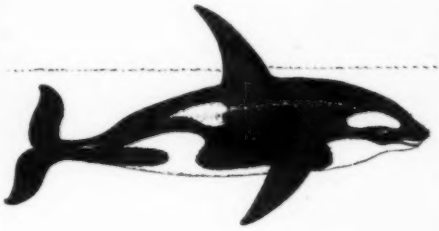
KILLER WHALE

OF all the creatures in the sea, the one most feared by sailors, fishermen and skin divers is the killer whale. This swift and powerful air-breathing mammal grows to a length of 30 feet and is armed with two rows of large oval teeth.

What makes it particularly deadly is its high intelligence and habit of hunting prey in packs with a leader at the head. A strange thing about the animal is that it belongs to the same family as the friendly porpoise.

Because of its large size the killer whale has a voracious appetite, and stories of its insatiable hunger are many. Eye-witnesses tell of seeing this killer stick its head out of the water to inspect the tops of ice floes for seals. When it found them it would bump the



floe from underneath until the ice cracked or the seals fell off into the water to be devoured. One scientist on an expedition was spotted by a killer whale on an ice floe. The scientist jumped from floe to floe as they cracked under his feet. He finally escaped by reaching land.

Not even people in boats are safe. A 25-foot fishing boat off the South African coast was attacked by one of these animals. It smashed the boat and ate the four occupants.

An eye-witness reported seeing a pack of intelligent killers attacking a large baleen whale. A group of them held the whale by the tail with their powerful jaws while the others tore out large meaty chunks of the tongue and lips. In their stomachs have been found parts of whales, Alaskan huskies, sea otters, seals and porpoises.

The best way to identify a killer whale is by its high dorsal fin which sticks out of the water as much as six feet. The body is black with white patches on the belly, chin, and over the eye.

So little is known about the habits of this animal that no advice can be given as to what to do in its presence. It would be superfluous to say that at the sight of that high dorsal fin, head for land! —*Elgin Ciampi*

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Ice Cap Gets Nuclear Reactor

The United States and Denmark plan to install and operate a portable nuclear reactor on the Greenland Ice Cap. A pressurized-water, prefabricated reactor, the first remote-area installation of "portable" atomic power in the free world, is to be installed later this year in snow tunnels at the U. S. Army's Camp Century in Greenland. The reactor, known as the PM-2A, will provide year-round heat and power to the camp.

Seismological Network Expanded

Construction of a seismological observatory designed to report earthquakes has started at Rensselaer Polytechnic Institute. The observatory will be part of the nation-wide earthquake warning network reporting to the U. S. Coast and Geodetic Survey. The seismographs will be located in bedrock ten feet underground. Recordings of data on earthquakes, blasts and other natural and artificial ground motions will be used for research on the structure of the earth's interior.

Perennial Hotfoot

FEDERAL geologists reluctantly delivered a report to the city fathers of Kulpmont, Pa. "An underground fire is heading straight for the million-dollar high school you've just completed," said the engineers. "It's within 150 feet and will soon menace the nearby housing project."

A hurried grant of $105,000 put Uncle Sam's unique task force of underground firemen to work. Ten anxious months later they suffocated the last dangerous glow. Along with this fire, many other critical conflagrations—some snuffed, some still burning—suggest that Pennsylvania could be renamed the Hotfoot State.

Pittsburgh's worst threat occurred in 1951 when a fire of unknown origin in an abandoned mineshaft gnawed close to a settlement of 75 houses, a machining plant and mainline railroad track. Firefighters invaded a smouldering inactive coalbed below Monessen to save another school. Several roads and a cemetery in Shamokin were undermined before something was done. Homeowners in Carbondale were stunned upon learning they sat on a mile-long cave, the outcome of "fumes" they'd been smelling for months.

While cities and towns in other states face similar fires, Bureau of Mines engineers are busiest in Pennsylvania where three dozen unchecked fires stand on their combat list.

How do the blazes start? Legend claims a stagecoach robber, hiding out in a mineshaft south of Gillette, Wyo., failed to douse his night fire before saddling up at dawn. The flames crawled to a rich vein and burned for 65 years. Usually though, coal, gas, heat, brush and grass fires fanned by wind are to blame.

The federal firemen use three methods of attacking underground fires: Surface Sealing—bulldozing a ten-foot blanket of earth atop the smouldering area. Isolation—excavating a peripheral trench and letting the fire burn itself out. Flushing—jamming silt through boreholes into the heart of the burning coal mine.

At last count, the mine experts have brought 131 fires under control. Eliminating hazards is one reason. It costs them only one to two cents to save a ton of coal. Example: the cost of extinguishing one fire in Schulkill County, Pa., was $39,500. But at today's market price, the two million spared tons of anthracite would bring eight million dollars!

—Henry S. Galus

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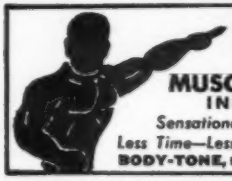

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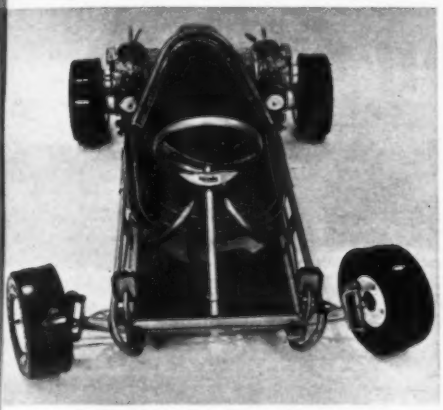
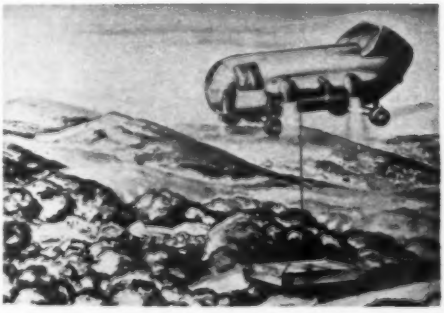


SCORPIO is new model in line of Putt-Nik racing karts. Made by Cummings Enterprises, Washington, Ga., Scorpio features a welded aircraft frame, contour belly pan, a choice of competition engines, torsion angle engine mounts, safety dishpan wheels and live axle. Lower center of gravity is aided by swept-back foam rubber adjustable seating. Model shown here is powered by dual West Bend engines. Note heavily reinforced sidebars. A brochure giving Scorpion's specifications is available without charge from manufacturer.



FLYING LORRY is proposed Bristol Siddeley design. Jet-propelled wingless vehicle will weigh about four-and-a-half tons, be capable of lifting a payload of about one-and-a-half tons. Overall length is 20 feet; the craft is as easy to park as a truck. The gas turbine engine produces a force equal to seven times its own weight. A smaller engine will propel it along normal roads on land wheels. Flying range of lorry is slightly less than 200 miles.

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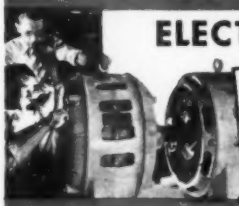

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Invention Clinic

Joseph H. Kraus

In this column each month Mr. Kraus will answer as many letters as space permits on those subjects he feels to be of widest general interest. Time does not allow him to reply to any letters except those printed here. Address your questions to the Invention Clinic, *Mechanix Illustrated*, 67 West 44 St., New York 36, N. Y.

Pipe Bender

Elbert Basham of Deputy, Ind., sends diagrams of a rod, pipe and bar stock bender. Is it any good?

We certainly think you should ask a patent attorney to report on a search. This seems to be a very simple and useful tool. You mention the possibility of making it in several sizes. You might give some thought to a minor redesign to furnish a number of sizes with one basic tool.

Gas Engine

Norman M. George of Big Bras D'or, Nova Scotia, Canada, says he has a model of a gas engine having only one moving part, measuring 12 inches square, 16 inches long and producing 40 horsepower. He wants to sell without patenting it. Who might be interested and what is it worth?

Many manufacturers might be interested but only after you have established your rights to your invention. The value might be very great if efficiency is comparable to existing engines. If efficiency is less than obtainable today you can forget the whole thing unless you have something basic which might yield better results following research and study.

INVENTOR'S TIP OF THE MONTH

Someone should develop and market a small, electrically driven hand cultivator to take the labor out of ridding flower beds of weeds and grass. Even better might be a weedicide which would not harm desirable plants.

Selling Unpatented Inventions

H. R. Gabert of Youngstown, Ohio, wants to know how to sell unpatented inventions. He has contacted many organizations advertising under "Inventions Wanted" but found them seeking fees for their services. He sends examples of some of his 20 ideas. "It would take a lot of money to patent all of them." Where can he get a list of manufacturers who might be interested?

There is no list to serve your needs. Personal contact with an interested manufacturer is best. However, most large manufacturers are not interested in unpatented ideas. They would need to pay for searches, then pay for the patents. As they may become vulnerable to suit, they play it safe. Similarly, brokers need to cover their out-of-pocket expenses and office overhead.

The thing for you to do is to develop one really good idea, patent this, then seek a market. If you are successful you should have funds enough to patent other ideas.

However, none of the ideas you sent is sufficiently worthy to risk a patent. The centering punch will not center unless the end of the stock is perfectly square and the punch is perfectly aligned. The hoop exerciser cannot be made to support even a very small child and especially not on uneven ground. Your best is the 90-degree clamp. You seem to have a very inventive mind and should

become successful if you will view your ideas from the perspective of the manufacturer and customer.

Rotor Twist Engine

D. G. Krudop of Manhattan, Kan., sends diagrams for an engine with a double rotor twist. He says that he spent $100 for a search but was not given much encouragement. The thing still "troubles" him. Is there such an engine on the market now?

No, there isn't, and doubtless never will be. You mention explosions, yet you do not outline the conditions under which an explosion can take place effectively. You need to provide for this and for some scavenging. Any search which cost you $100 should have brought you hundreds of copies of patents which you might study.

Push-Button Flush Tank

Joseph Johnson of Coventry Center, R. I., suggests an electrical system to operate the flushing mechanism for the lavatory bowl. Is there a need for such an item?

Non-electrical automatic flush and/or push-button systems have been developed. Your suggested electrical arrangement offers no advantages over known hydro-mechanical methods. However, you might develop this into something salable where only weak pressures are available. You might consider redesigning to remove the flush tank entirely from within the bathroom, include the safety and emergency systems you recommend and develop an electrical valve mechanism instead of a makeshift.

Lock Line Block

The Ballentines of Diamond, Ohio, send a description and drawings of a patent for a block which holds a line to serve as a guide during masonry constructions. What should they do with it?

This appears to be an inexpensive and useful article. The question is: "How do masons feel about it?" Perhaps the thing to do would be to make up a number of samples, then try to get a local masonry supply house to offer them for sale. Preferably you should make photographic enlargements of your patent drawings to show how the blocks are used. This experiment in marketing might give you an idea of whether or not the average mason will go for your invention or if he prefers to stick to the nail and string.

[*Continued on next page*]

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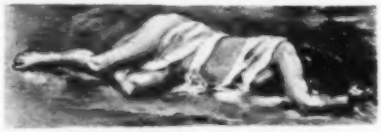

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Bottle Opener

Fritz O. Lind of Petersburg, Va., sends copy of his patent for a wall-type bott opener. What is our opinion of its valu

For those who prefer quality, this seems be excellent. However, the average hom owner does not go for wall type opener

Book Stand

Armen Melikian of Stillwater, Okla., h designed a book stand "which serves its pur pose very well." He has been advised patent it. What is our opinion?

This could become a salable item or a com plete dud. Everything depends on the ma terial from which it is made and how attrac tive it is. However, book stands have bee known since the beginning of books. Chec around and see how many people are usin the stands. This establishes that the poten tial for sale is not good. •

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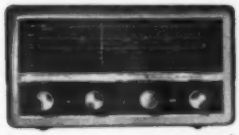

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PRINTING, ADVERTISING Salesmen—Excellent moneymaking sideline selling Decalcomania Name Plates, small quantities. Automobile initials. Sign Letters. Free Samples, "Ralco," XL, Boston 19, Mass.

MEN! WOMEN! 60% profit on cosmetics. Famous nationally advertised Hollywood cosmetics pay 60%. Make $25 day up. Hire others. For free samples, details, write Studio Girl, Glendale, California, Dept. 50010J.

FREE! BEAUTIFUL Mexican Curios! Rush 30¢ stamps mailing. Sylviam, Apartado 9036, Mexico City.

• • • SALESMEN WANTED

START MAKING money now. Every business a prospect. Solicit delinquent accounts. Instructions free. Top commissions. National Credit, 304B Pickwick Bldg., Kansas City 6, Mo.

YOUR OWN spare time home-operated business. Take over your area as our Service Distributor keeping retail stores supplied. Nationally advertised 30-year-old line pays up to $20.00 hour. Under $100.00 for merchandise gets you started. For samples, highly successful plan, write NOVO, 3855 Lincoln, Desk X-89, Chicago 13.

IF YOU'RE interested in making money in selling, see the hundreds of exceptional opportunities in Salesmen's Opportunity Magazine. Send name for your copy, absolutely free. Tell us what you're selling now, Opportunity, 848 N. Dearborn, Dept. 19, Chicago 10, Illinois.

ANYONE CAN sell famous Hoover Uniforms for beauty shops, waitresses, nurses, doctors, others. Miracle fabrics—Nylon, Dacron, Wash 'N Wear Cottons. Exclusive styles, top quality. Big income, real future. Equipment free. Hoover, Dept. M-102, New York 11, N. Y.

MAKE EXTRA Money—Big Cash Commissions plus premiums for you and your customers. Sell Advertising Book Matches—sensational new Tenorama, Glamour Girls, Hillbillies; dozens others. All sizes—Quick daily sales; big repeat business. Free Master Kit makes selling easy—no experience necessary. Superior Match, Dept. F1060, 7530 Greenwood, Chicago 19.

GET NEW Shirt Outfit Free! Make $90 weekly on 5 average orders a day. Famous quality made-to-measure dress and sport shirts, $3.95 up, sell fast to all men. No experience needed. Full or part time. Write: Packard Shirt Co., Dept. 217, Terre Haute, Ind.

MONEY-MAKING OPPORTUNITY! Take Big profit orders for world famous Patented Varieties Fruit Trees. Also Flowering Shrubs, Roses, Vines. Big Sales outfit Free. Stark Bro's, Desk 30101, Louisiana, Missouri.

MAKE UP to $50.00 a day soliciting delinquent accounts. Terrific commissions. Write today. General Finance, 304W Pickwick Bldg., Kansas City 6, Mo.

MAKE SMALL fortune even spare time with sensational new longer-burning Light Bulbs, with amazing Free Replacement Guarantee—never again buy light bulbs. Homes, stores, offices, etc. Multimillion dollar market. Free sales kit. Merlite (Bulb Div.), 114 E. 32nd, Dept. C-73U, New York 16.

WILL YOU wear new suits and topcoats without one penny cost and agree to show them to friends? You can make up to $30.00 in a day even in spare time, without canvassing. J. C. Field & Son, Inc., Dept. L-1826, Harrison & Throop Sts., Chicago 7, Illinois.

BIG MONEY Now To New Years! Show fabulous New Sculpture Embossed Calendar Line to stores, offices your area. Three dimensions, vivid color. Look, feel real. Many designs—Kids, Sports, etc. Sell on sight. Free Sales Outfit. Hurry! Write Arrow Press, 513 Fourth Ave., South, Dept. 81-P, Minneapolis, Minn.

MI Classified Advertisements

$1,000,00 A MONTH for making dramatic 3-second demonstration of amazing lightweight Presto Fire Extinguisher. New chemical used by Airforce snuffs out fires instantly. Only $4.95. Terrific commissions. Millions want it. Free Kit. Merlite, 114 E. 32nd, Dept. P-66U, New York 16.

WILL YOU test new items in your home? Surprisingly big pay. Latest conveniences for home, car. Send no money. Just your name. Kristee 102, Akron, Ohio.

AUTOMATIC FIRE Extinguisher Salesman. Costs $3.95. Out-O-Matic, 1737A East 31st Avenue, Denver 5, Colorado.

• • • BUSINESS OPPORTUNITIES

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COLORGLAZED CONCRETE pottery made without molds. Patented method. Cemetery products, novelties, files. Basement leaksealing. Moneymaking projects. Booklets, details free. Men only. National Pottery, Grand Rapids, Minnesota.

MAIL ORDER Franchise. No experience needed. Spencer Gifts, a well-established and successful mail order firm, starts you in business. Supplies catalogs with your own name imprinted. No investment in stock. No shipping merchandise. Catalog items pre-tested for salability. Initial investment of less than $50 can get you started. Write for Free information kit. Spencer Gifts, HJ-51, Spencer Building, Atlantic City, N. J.

BUY DIRECT from factories. Appliances, cameras, watches! Free details! Cam Co., 6810MI-20th Ave., Brooklyn 4, N. Y.

190 FRANCHISE OPPORTUNITIES in new franchise directory. $2.00 postpaid. Pilot Pub, Dept. M, 46 West 33, New York 1.

PLATE BABY shoes, jewelry, gifts, bronze and colored pearl. We finance. Free booklet. Thomas, 11029 South Vermont, Los Angeles 44.

YOUR ENVELOPES addressed accurately, reasonably. Fast service. We have capable addressers in your city. Glenway System, Box 6568, Cleveland 1, Ohio.

GROW ORCHIDS at home. Profitable, fascinating. Successful home grower explains special light, temperature and humidity conditions orchids need. Free—full details. Orchids, 100 S. Vermont, Los Angeles 4.

BRONZE BABY Shoes: Instructions, Equipment and Mountings for genuine Electroplating Process. Largest Supplier of all Plating Equipment, Supplies. Free Catalog. Hollywood Bronze Supply, Dept. B-5, 1624 East First, Los Angeles 33, Calif.

IMMEDIATE PROFITS with no capital or experience. Take orders for all magazine subscriptions. Friends and neighbors are your prospects. Write now for complete, free kit. McGregor Magazine Agency, Dept. 12B, Mount Morris, Illinois.

AVERAGE MAN Needed Who Wants To Earn Above-Average Income In Full Or Spare Time. Your area is wide open for an independent Greeting Card rack distributor. Be your own boss servicing stores of all types with exclusive fine quality Christmas and All Occasion greeting Cards. Studio and traditional designs. No previous experience needed. Established route can bring steady income. Small investment required can be paid off with initial profits. Write at once to: Treasure Greetings, 24 Lake Street, Elmira, N. Y.

$70 WEEKLY—HOME, spare time. Simplified mail bookkeeping. Immediate income—easy! Auditax, 34757E, Los Angeles 34.

11,000 NEW PROSPECTS Daily. Baby record books, shoes, albums. Sell mail-order. Use our literature. Write: No-Co-Ro, Capitola 16, Calif.

INCREDIBLE NEW "Table-Top" Machine manufactures over 15,000 saleable products. Also laminates, encases, moulds and plates in bronze, chrome, or copper. 20¢ materials produce $10.00 products. Free Confidential Details and Home-Business Plan. Plasti-Form, Dept. MI-10, Gardena, Calif.

$250.00 WEEK SPARE time profit possible. Earn at home with new fascinating Printing method. $5 starts you—send no money now. Free Confidential Facts and Valuable sample. Screen-Print, OR, Los Angeles 61.

VENDING MACHINES—No selling. Operate a route of coin machines and earn amazing profits. 32-page catalog Free! Parkway Machine Corporation, Dept. 2, 715 Ensor St., Baltimore 2, Md.

BECOME TAX Consultant. Graduates earn $1,000-$3,000 every tax season preparing returns evenings. State approved. Union Institute, Lakewood (5R), N. J.

LEARN SEWING Machine repairing. To $125 weekly. Sparetime. Supplies. Add to present business. Write today! Taylor Service, Box 2126, San Bernardino, Calif.

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PACKAGE AT Home For Profit! We supply everything. No selling, ready market. Free details. HPC, 2212EL Jesse Street, Los Angeles 23.

WANT TO Make Big Money At Home? $10.00 profit in an hour possible with Invisible Mending. Make tears, holes disappear from clothing, fabrics. Steady year-round demand from cleaners, laundries, homes. Details Free. Fabricon, 6254 Broadway, Chicago 40, Ill.

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PIANO TUNING learned at home quickly. Tremendous field! Musical knowledge unnecessary. Be independent! Information free. Empire School of Piano Tuning, Champaign, Ill. (Founded 1935).

OPPORTUNITY TO earn $15,000-$30,000 annually. Franchise protected. Granted on $12,500 basis. Live at home. No merchandise to buy. Selfemployed. One of most exclusive and noncompetitive Businesses in United States and Canada. Send for free explanatory booklet. Harrell & Company, Box 8-F, Louisville, Ill.

CASH FROM Sawdust, Tin-Cans, Newspapers. Over 200 methods. Instructions $1.00. Charles Company, 42-EPR, Norwood, Ohio.

GROW MUSHROOMS. Cellar, shed and outdoors. Spare, full time, year round. We pay $4.50 lb. dried. We have 29,000 customers. Free Book. Mushrooms, Dept. 183, 2954 Admiral Way, Seattle, Wash.

BAKE NEW Greaseless Doughnuts In Kitchen. Sell stores. Free recipes. Irving, 3605 South 15th, Minneapolis 7, Minnesota.

RE-CAST JUNK batteries into new. Latest achievements. Battery Laboratories, Bayou LaBatre, Alabama.

WANTED: HOME producers, to be subcontractors. Cast plastic products for manufacturers in our Clearing House Service. Thousands of easily-made items required. Cash in at home, without previous experience. Plastic Service Associates, Dept. 10-MI, East Boston 28, Mass.

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FRANCHISES MAKE Profits! Have your own prosperous franchise business. Opportunities nationwide for distributors, dealers, agency operators. Write today. National Franchise Reports, MI-528, 333 North Michigan, Chicago 1.

IMPORT-EXPORT OPPORTUNITY, profitable, world-wide mail-order business from home without capital; or travel abroad. Established world trader ships instructions for no-risk examination. Experience unnecessary. Free details. Mellinger, Dept. C75A, Los Angeles 24, Calif.

$3.00 HOUR—HOME, sparetime, assembling pump lamps. Easy. Free Details. Ougor, Caldwell, Arkansas.

DRAFTING PAYS Big Money . . . leads to top positions in automotive, aeronautical, construction, mechanical fields. Learn at home in spare time. All equipment supplied. Pay Later Plan. Free Book. Christy Trades School, A-9106, 3214 Lawrence, Chicago 25.

IF YOU Like Motorcycles And Money then send for Harley-Davidson Dealership Book on how to become a dealer of motorcycles and a new line of motor scooters. Here's a chance to own your own business with a very modest investment. The youth market is beginning to explode and the next few years promise a chance to cash in on it. Write for free illustrated Dealership Book today. Harley-Davidson Motor Company, Dept. MI, Milwaukee 1, Wisconsin.

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"STRIKE IT Rich" With home repairs at set prices! My $160,000 yearly business makes fantastic profits. Free Details. House Clinic National, Dept. M-10, P. O. Box 4804, Dallas 6, Texas.

MARKETS EVERYWHERE. Make Artistic concrete birdbaths, pottery. Best coloring. Home workshop. Hundred varieties. Hollywood Cementcraft, 8527-E Wonderland, Hollywood 46, Calif.

$75.00 WEEKLY POSSIBLE mailing catalogs. Roe, 2317C Marshall, Chicago 23, Ill.

COLLECT NAMES for us, $1.00 each. Instructions 25¢. Wilson's Specialties, Box 61-J, Mt. Pleasant, Michigan.

OPERATE RESTAURANT Or Diner. Free Booklet reveals plan. Write School of Restaurant Business, Dept. KC-729, 335 W. Madison, Chicago 6, Illinois.

$34.70 TWO HOURS. Manufacturing Concrete Products. No Selling. Castings #6, 2907 Dundee, Rapid City, South Dakota.

NEW HOME-IMPORT Mail Order Profitunity! Your mailbox stuffed with money! No selling. No experience. No investment. We supply everything. Free Details. Mail Order Distributors (Import Division) Dept. B3AC, 15201 South Broadway, Los Angeles, Calif.

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MOTEL-RESORT MANAGEMENT—Qualify for hundreds fascinating, leisurely, well paid executive openings. Learn at home. Free booklet. Motel Managers Training School MI-4, 612 S. Serrano, Los Angeles 5.

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CANDLEMAKING & DECORATING Business Opportunity. Field wide open. Learn molding, dipping, decorating. Expand to colorful candle shop later. Write for free facts on home instruction method. Candlecraft Institute, Dept. X-163, Fallbrook, Calif.

FREE BOOK "990 Successful, Little-Known Businesses." Work home! Plymouth—6K, Brooklyn 4, New York.

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FOREIGN JOBS—Latin America, Alaska, Canada, up to $1500 monthly. Up-to-date 1960 Foreign Service Directory gives complete information; hot list of firms hiring for Military and Civilian Construction, Aircraft, Oil, Exporters-Importers, Mining. How-When-Where to apply. 12th successful year. $1.00. Global Reports, Box 8873-MI, Los Angeles 8, Calif.

LATEST INFORMATION — Civil Service jobs—mechanical, clerical, professional—overseas, U.S.A. List $1.00. Civil Service Bulletin, 115R Haypath Road, Plainview, New York.

MAKE EXTRA Money selling advertising matchbooks. Free catalog and sales outfit. Matchcorp, Dept. MI-100, Chicago 32.

FREE INFORMATION — USA Overseas Jobs, High Pay. Transportation. Futures, Dept. L, 215 West 34th Street, New York City 1.

AMERICAN—OVERSEAS Jobs. Higher Pay. Transportation — Benefits. Men-Women. Act Now!! Write: Employment Headquarters, 79 Wall Street, Dept. 21-A, New York 5.

JOBS ON Ships and Yachts traveling Foreign Countries. Davenport's, 1354-M, GPO NY 1, NY.

JOBS, SHIPS, $100 Weekly, Beginners, Seamans Service, Box 17-B, Brooklyn 8, N. Y.

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BE INDEPENDENT, Be Secure, Have Your Own Big Money Mail Order Business. Earn $10,000 and up annually. Start from home. Start small and grow big. We set you up—show you how—guarantee results. You never invest one cent in inventory. All orders shipped for you. Collect Cash In Advance. Exciting details free!! National Mail Order Corp., Dept. 12, P.O. Box 828, Preakness Station, Wayne, N. J.

START BIG-PAY Business At Home in spare time. No experience needed to operate little table-top machine for bronzing baby shoes. Make $5.46 profit on every pair. Full particulars free. Send postcard to Mason, 1512 Jarvis, Room CM-4-L, Chicago 26, Ill.

VENDING MACHINES—No selling. Operate a route of coin machines and earn amazing profits. 32-page catalog Free! Parkway Machine Corporation, Dept. 15, 715 Ensor St., Baltimore 2, Md.

MAKE EXTRA Money—Big Cash Commissions plus premiums for you and your customers. Sell Advertising Book Matches—sensational new Tenorama, Glamour Girls, Hillbillies; dozens others. All sizes—Quick daily sales; big repeat business. Free Master Kit makes selling easy—no experience necessary. Superior Match, Dept. FX-1060, 7530 Greenwood, Chicago 19.

START YOUR Own Business On Credit (U.S. and Canada). Your own boss. 1396 Dealers sold $5,000 to $25,500 in 1959. We supply stocks, equipment on credit. 200 home necessities. Sales experience unnecessary. Pleasant profitable business backed by world-wide industry. Write Rawleigh's, Dept. J-U-MOM, Freeport, Ill.

EARN $240.00 A Month at home, spare time, doing only two $5.00 Invisible Mending jobs a day. Big money paid for service that makes cuts, tears, disappear from fabrics. Steady demand. Details free. Fabricon, 6256 Broadway, Chicago 40, Ill.

MAKE BIG Easy Profits making costume jewelry at home in spare time! Quick, easy to make; easier to sell! Details Free! Don-Bar, 3511 W. Armitage, Dept. K-212, Chicago 47, Ill.

BUSINESS OF your own. Earning potential as high as $40,000 annually. Issued on $12,500 base. No merchandise to buy. Send for free explanatory booklet. Harrell & Company, Box 8-FF, Louisville, Ill.

SELL CARS! Self training Manual by expert. Approved by 7 auto editors. Free details. Dept. MX, Westminster Automotive Sales Consultants, Box 130, Scarborough, Ontario, Canada.

BUSINESS KIT Free! Postcard puts you in business! Complete line 230 shoe styles, jackets! New Discoveries pay Big Commissions. No investment. Send for Free Kit. Mason, Chippewa Falls K-325, Wisconsin.

BECOME INDEPENDENT with your own franchise business. Thousands earning handsome incomes. Request interesting facts today. National Franchise Reports, MX-528, 333 North Michigan, Chicago 1.

EASY TO start Rubber Stamp business at home in spare time. Make up to $9.00 an hour without experience. Facts Free. Write Roberts, 1512 Jarvis, Room CR-4-L, Chicago 26.

MAKE $50 SPARE Time Cash on 50 boxes new Lustrecolor name-imprinted Christmas Cards, other money-makers. Profits to 100% plus bonus. Samples sent on approval; Free Sample Album, Free promptness gift. Southern, 478 N. Hollywood, Dept. C-508, Memphis, Tenn.

DETECTIVES—EXCELLENT Opportunities. Experience unnecessary. Detective Particulars free. Write, George Wagoner, 125-J West 86th, New York 24.

ENJOY BIG extra income developing new product ideas. Plan $1.00. Price, 409 W. First, Genoa, Ill.

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$1,000.-$10,000. YEARLY POSSIBLE, raising Fish Worms! Full, sparetime! backyard, garage, basement, spare room. Sell your crop to us! Send name to: Red Wigglers, Warsaw 8, Indiana.

MAKE BIG Money with fast-selling line self-help Manuscripts—many titles! Imprints available; drop shipments if desired! Complete details to Established Mailorder Dealers only! Economy, Box 2580-MI, Greensboro, North Carolina.

GET LISTED for life! Receive hundreds free magazines, samples, special offers. Rush 25¢, stamped, addressed envelope. Columbia, 45-09-1M Broadway, Long Island City, New York.

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MAKE MONEY Writing Short Paragraphs! No tedious study. I tell you what to write, where and how to sell; and supply list of editors buying from beginners. Many small checks add up quickly. Write to sell, right away. Send for free facts. Benson Barret, Dept. C-78A-X, 7464 Clark, Chicago 26.

MEN-WOMEN! START Money-Making Plastic Laminating Business at home in spare time. Material that costs 11¢ brings back $2.58. No canvassing or selling but mail orders bring in $20 a day. Write for full particulars Free. Rush name on postcard to Warner, Room CL-4-L, 1512 Jarvis, Chicago 26, Ill.

MAKE MONEY Writing Short Paragraphs. Information Free. Barrett, Dept. C-78B-X, 7464 No. Clark, Chicago 26.

$15.00 THOUSAND ADDRESSING envelopes, postcards, home — longhand, typewriter. Particulars free. Q. Economy, Box 2580, Greensboro, North Carolina.

SECOND INCOME? Request free details. Sanchez, Dept. U2, 240-22nd Avenue, San Francisco 21, Calif.

MI Classified Advertisements

"I" . . . MULTIPLY "Money" Itself!!! Information—55¢. Box B-102-MI, Grand Rapids 7, Mich.

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VENDING MACHINES—No selling. Operate a route of coin machines and earn amazing profits. 32-page catalog Free! Parkway Machine Corporation, Dept. 16, 715 Emsor St., Baltimore 2, Md.

$5,000 FROM HALF Acre growing Ginseng, crop bought. Particulars 10c. Associated Growers, Sperling, Manitoba.

FREE PICTURE Folder, "How to Make $3,000 Yearly, Sparetime, Backyard, Raising Earthworms!" Oakhaven-3, Cedar Hill, Texas.

DETECTIVES—MAKE Secret Investigations. Interesting occupation. Write, George Wagoner, 125-J West 86th, New York 24.

SHARPEN-SCISSORS, PINKERS. Inexpensive outfit. Clipper sharpener. Blackhawk, Sheldahl 6, Iowa.

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EXPERIMENTERS: NEW! Bigger Catalog and "Experiments Booklet." Only—25¢. Hagenow Laboratories, Manitowoc, Wisconsin.

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JEEPS—$223.00, TRUCKS—$212.00, Tractors—$68.00, Tools, Guns. Typical Government Surplus Prices. Buy Direct. List Of Depots, Procedure, Full Details Only $1.00. New York Enterprises, Wall Street, Box 402-H9, New York 5.

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NEW DELUXE wholesale Catalog, automobile catalog, and others. Housewares, appliances, refrigerators, freezers, washers, dryers, television, radios, furniture, clothing, luggage, binoculars, phonographs, recorders, cameras, projectors, typewriters, power tools, toys, sporting goods, watches, jewelry. Name brands. Huge discounts. Postcard (any card): Selbyco, Decatur 137, Illinois.

LARGEST WHOLESALE supply in U. S. Free catalogs. Furniture, clothing, appliances, housewares, automobiles and accessories, farm equipment, tools, hobby supplies, new products, imports. Free details. Associated Wholesalers, Box 2068M-2, Sioux City 4, Iowa.

TYPEWRITERS, ADDERS, Calculators, IBM Electrics $89.50, Standards $17.50. Free Catalog. Gilberti, Dept. 8, 149 Orchard St., White Plains, N. Y.

BUY AT Factory Prices. Typewriters, Housewares, Jewelry, Watches, Musical Instruments, Appliances, Hardware, Television, Sporting Goods, Cameras. Thousands other Nationally advertised products. New Factory Buying Plan saves you up to 40% below wholesale. Details free. Factory Supply Company, Box 1857M, Paterson, New Jersey.

SEND FOR Free Handy Catalog and Free Gift Offer. Merchant, 228 Blueberry, Hicksville, New York.

WORLD'S LARGEST wholesale supply. Buy from 269 American, European, Japanese wholesalers. Tailormade suits from Hongkong. 123 Dropship catalogs. Rockbottom prices. Free details. International Buyers, 216-MI Jackson, Chicago 6, Illinois.

100,000 PRODUCTS WHOLESALE! Terrific bargains! United Wholesalers, 1265-X Broadway, New York 1, N. Y.

TRANSISTOR RADIO Bargains. Free Literature. Kalenak, 1100 Heeney, Johnstown, Penna.

• • • FORMULAS, PLANS

EXCLUSIVE MANUFACTURING Formulas and Processes. List Free. Moon, Martville, N. Y.

FORMULAS, ALL Kinds. Latest. Best, Literature, Stamp. Kemistry, Park Ridge, Illinois.

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GOLD-SILVER DETECTORS. Latest types. Five models including transistors. Violites for tungsten, etc. Geiger Counters. No finer instruments anywhere. Free Information. Detectron, Dept. 10-A, Sylmar, California.

UNDISCOVERED WEALTH! Transistorized M-Scope detects gold, silver, jewelry, etc. Lightweight guaranteed. From $59.50, Easy Terms. Free Catalog. Fisher Research, Dept. C-4, Palo Alto, Calif.

TRANSISTOR TREASURE Detectors, underwater detectors. Many models. Free catalog. Gardiner Electronics Co., Dept. 3, 2545 East Indian School, Phoenix, Ariz.

TREASURE! MAP, Handbook, 25¢. Locators. Howe, 811 Kansas, Atchison, Kansas.

• • • OF INTEREST TO WOMEN

SENSATIONAL CHRISTMAS Cards from Art Linkletter's "Favorite Selections" sell faster. His name on every box. Make good money spare time showing friends. Newest Personal Photo-Cards, Name-Imprints, Novelties. Send 25¢ for $1.00 Linkletter Assortment, samples on approval. Midwest, 1113 Washington, Dept. 416-D, St. Louis 1, Mo.

LADIES: EARN up to $2.00 hour sewing babywear! No house selling! Send postcard to Cuties, Warsaw 58, Indiana.

MEN! WOMEN! 60% profit on cosmetics. Famous nationally advertised Hollywood cosmetics pay 60%. Make $25 day up. Hire others. For free samples, details, write Studio Girl, Glendale, California, Dept. 50010JX.

MAKE $25 TO $35 weekly addressing envelopes. Our instructions reveal how. Glenway, Box 6568, Cleveland 1, Ohio.

HOME TYPING: $65 week possible! Details, $1. Treasury, 709 Webster, New Rochelle MI-1, N. Y.

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COLORED OR White 8½x11 Offset $6.50—1000; $18—5000. Fast! Glaser, 8 West 45 St., New York City 36.

1,000 BUSINESS CARDS, "Raised Letters" $3.95. Samples. Pioneer, MI-10, Island Park, N. Y.

BUSINESS PRINTING. Samples, Catalog Free. Howprint, 723-L Eunice, Webster Groves 19, Missouri.

OFFSET PRINTING. 1,000 8½x11 $5.50. Alpine, Box 676-GP, Cupertino, California.

1000 BUSINESS CARDS, "Raised Letters" $3.75 postpaid, Samples. Routh, 2633 Randleman, Greensboro, N. C.

PHOTO—OFFSET, Samples Prices, Free. Litho, Ft. Walton Bch, Florida.

MIMEOGRAPHING SERVICE U.S.A. Swanson, 834 (Y) Harvey Road, Toms River, New Jersey.

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PRINTING OUTFITS, type, supplies. Send dime for illustrated supply book and samples. Kelsey, Inc., H-57, Meriden, Conn.

MAKE YOUR Own self-molding rubber stamps and printing cuts. Plexirubber, Argyle (3), Wisconsin.

RUBBER STAMP Presses, Supplies. Kiewiet, 2025 Barney Road, Kalamazoo, Michigan.

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"OLD GLORY" In Flaming Colors!!! USA Flag giant beauty from Honduras! Enormous United Nations Mexican Stamp! Plus Strange Gorilla issue, Duke of Windsor' Morocco, lovely Macao Flowers, Wild Buffalo stamp & others, 10¢ with approvals. Sunny Stamps, Apopka 5, Florida.

FREE! $1.00 WORTH, your choice, from first selection. No strings! Adults only. Rush request now. Philatelics, Dept. VF, New Paltz, N. Y.

UNITED STATES commemorative collection containing 33 different—10¢. Approvals. White, 516-M Avenue L, Brooklyn 30, New York.

ALBUM! HUNDREDS of Spaces! Only 10¢. Postpaid! Stampmart, Hartford 1, Connecticut.

TERRIFIC STAMP Bargain! Israel—Iceland—Vatican Assortment—plus exotic triangle set—Also fabulous British Colonial Accumulation — Plus large stamp book—All four offers free—Send 10¢ to cover postage. Empire Stamp Corp., Dept. MI, Toronto, Can.

500 DIFFERENT WORLD-WIDE from Formosa, Morocco, Indonesia, etc., cataloging over $15.00, only 35¢. Offer to Adults Only. Approvals. Littleton Stamp Company, Littleton Q4, New Hampshire.

FANTASTIC FISH Triangles!! Valuable "Ben Franklin" on Canal Zone!! Flaming bi-colored Volcano Triangle!! Lovely Olympics Triangle!! Plus Icy Greenland, Weird Wild Beast issue and others, 10¢ with approvals. Ozark Stamps, Spring Lake 5, Michigan.

225 STAMPS FOR Only 10c! This mammoth value includes Airmails, Pictorials; stamps from strange Countries cataloguing up to 25c each! Also approvals. Mystic Stamp Company, Camden 30, N. Y.

FREE! GIANT Bargain Catalog—New Edition listing thousands of bargains including U. S. & B. N. A. stamps, packets, mixtures, albums, accessories and supplies; sent with beautiful approvals. Jamestown Stamp, Dept. E100MI, Jamestown, New York.

307 WORLDWIDE DIFFERENT stamps only 25¢. Approvals. Niagastamp, St. Catharines 673, Ontario.

NUDES SET (4)—unusual approvals—10¢. Atlasco, Eisenhower, Racine, Wisconsin.

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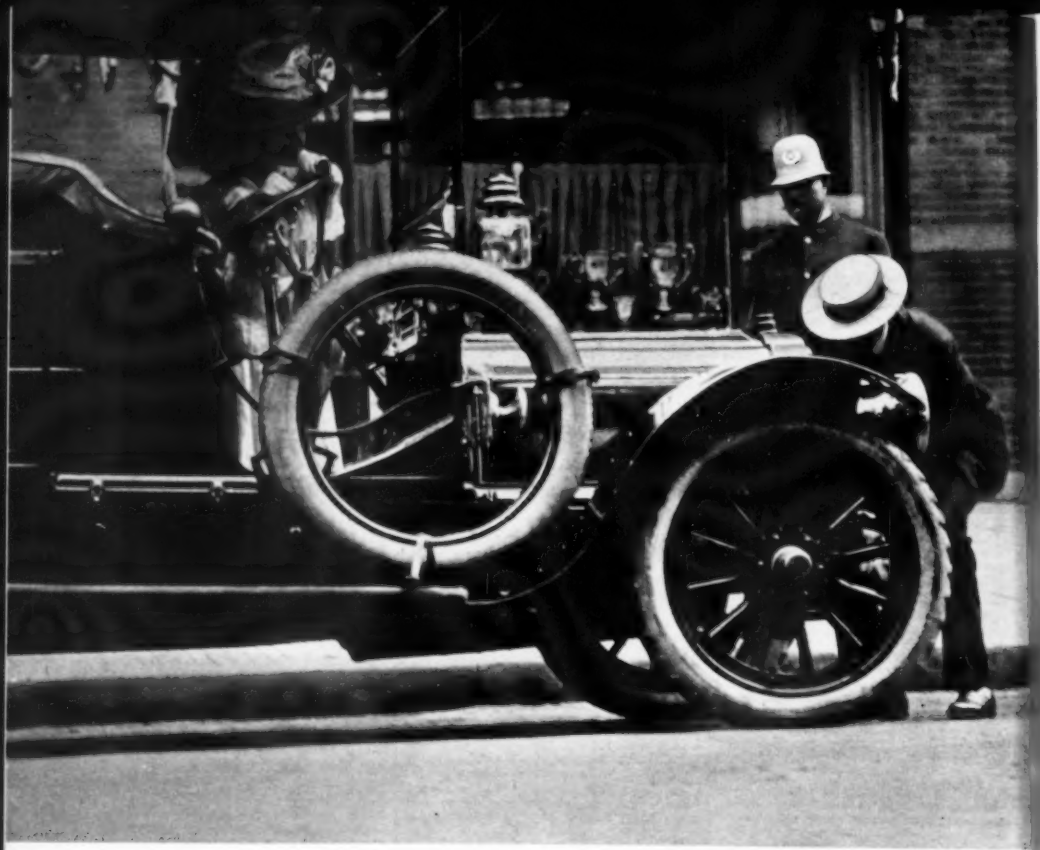

What torque really means

When grandfather cranked his car, he was applying torque. Torque is simply the twisting effort such as you apply when turning a door-knob.

Grandfather applied torque by pushing down on a crank. (Pulling up was far safer, since it avoided a possible kick-back and a broken arm.) In either case, the torque he generated could have been measured by multiplying the *pounds* of his force on the crank-handle by the length of the crank-arm in feet. Unless grandfather was very husky, his torque probably didn't amount to more than 50 *pounds* times 1 *foot* or 50 *pound-feet.*

Torque is important to you because it, and not horsepower, actually starts your engine and moves your car. Explosive forces on the pistons of your engine are transmitted by the connecting rods to the crankshaft cranks which generate torque on that shaft. But the largest 1960 passenger car engine generates only 470 pound-feet of torque, which is still not enough to move a stationary car. However, the transmission and differential are able to increase engine torque six or seven times. The rear wheels then convert it into powerful traction at the road surface which reacts to propel the car.

To develop maximum torque, your engine needs 100% Climate Controlled Texaco gasoline—either Texaco Sky Chief Su-preme or regular-price Texaco Fire Chief. Drive with more pleasure and save for good measure with Texaco.

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MAIL FOR McCAHILL

UNCLE TOM ANSWERS HIS MOST INTERESTING LETTERS IN THIS COLUMN. WRITE TO HIM AT *MECHANIX ILLUSTRATED*, 67 WEST 44TH ST., NEW YORK 36, N. Y.

● *Well, the results of the Mobilgas Economy Run are in and I note to my amazement that every car in the United States goes half as far again on a gallon of gas in the run as it is capable of going under normal driving conditions. The mileage figures are the absolute gospel truth but upon reading them, one wonders why his own car won't achieve these figures. It's about time that these things were run under average driving conditions and the drivers drove their cars the way an average driver would drive his car. What do you think, Uncle Tom?*

Jack Flemming
Oklahoma City, Okla.

When you speak of "average" driving conditions you must also figure in "average" drivers. It is my belief that the average car driving on the highways today could get from two to three more miles per gallon if it weren't being driven by an average driver. The most important part in economy driving, such as in the Mobilgas clambake, is that nearly all the drivers are good to start with. When you tie this up with the fact that they are devoting their *full* concentration every second to driving as perfectly as they can for top mileage, you end up with conditions the average driver wouldn't tolerate. After all, I officially averaged 21.7 mpg coast-to-coast with a Pontiac without pulling any tricks but I *was* trying and concentrating on my driving every second. Normally I wouldn't have any part of this kind of driving—life's too short.

● *What is the best thing to check when buying a new car?*

Phyllis McGovern
Los Angeles, Calif.

Your bank statement.

● *After hearing about the fantastic performance of the Valiants at Daytona, I rushed down to my local Valiant dealer to order a power-pack Valiant. When I asked about the power kit the guy gave me a "I'd-better-humor-him" look and asked, "What power kit? I never heard of it." So what gives? I thought Daytona cars had to use only factory-type goodies.*

James Daugherty
Chicago, Ill.

Go back and ask the stupid jerk if he ever heard of the factory.

● *To settle an argument, can you tell me which has the stronger body, a two-door model or four-door, and which is freer from rattles? Also, is a convertible heavier than either one?*

John Curtin
Chicago, Ill.

With most makes of cars the convertible is the heaviest model. Regular four-door sedans with centerposts between the doors are the strongest. Four-door hardtops are weaker and certainly more rattle-prone. The convertible is the noisiest of all.

● *I'm 17 and a high school senior. I plan on entering college this fall and I am wondering if it will be wise to build a 1932 Ford Roadster?*

D.L.B.
Ithaca, N.Y.

Why not? Ford did it almost 30 years ago.

● *Uncle Tom, you own so many big dogs and they always look so darn healthy in their pictures, I thought I'd write and ask you what you feed them and how much. I'm getting a police dog this summer. Should I use canned or dry food?*

C. L. Barrett
South Bend, Ind.

My dogs are working dogs and during the hunting and field trial seasons I feed them as much as they will eat. I use the best canned food and the best dry food I can buy,

[*Continued on next page*]

A glass packed muffler that looks like original equipment—of popular flat oval shape—with a tone that's mellow without bellow—distinctive, but lullaby-low!

NEW SHAPE—Redesigned with compact flat oval, just 3 in. thick. Fits all cars snugly, with more road clearance.

NEW SOUND—No flat harsh blare to invite a ticket—intermediate shell and tone chamber provide muted purr.

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And be sure to see the famous Goerlich—original equipment type mufflers—the economical Standard or deluxe Master. Either is the biggest buy for your dollars.

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MUFFLERS AND PIPES

Dept. 3K, 619 Smith St., Toledo 1, Ohio

alternating with both. Also, to keep their coats in top condition, each dog gets a raw egg every day with his breakfast. Many trainers feel that one meal a day is best but I feel my dogs work better if they've had a good breakfast followed up by a good dinner at the end of the day.

● *Help! SOS!! You have gotten me into a peck of trouble. People will never let me alone on this until they hear it from you! Didn't you once talk about crazy fuels in Mail for McCahill and mention an engine that ran for a few hours on a dead alley cat? I know you did but nobody will believe me and I can't find it in any of my back copies. They are ready to commit me so please, help!*

Mike Leahy
Orinda, Calif.

Why, Mike, where did you ever get such an idea? (See page 50, Oct. '59 MI)

● *Don't you think paper air filter replacement cartridges are too expensive?*

James T. Gorman
Knoxville, Tenn.

Yes.

● *I am very interesting by your last book, Today's Sports And Competition Cars. Could you tell me where I can find it in France—or give me the address of your publisher in the U.S.? By the way, I can tell you that I have a complete satisfaction with my Karmann-Ghia, but it should be nervously equipped by a 1600s Porsche engine, don't you think? Thank you very much for the derangement and sorry for my poor English,* Tres sympathiquement,

Jack Dupuy
Rennes, France

You're not half as deranged as I am, Jack. If Smith's book store on the Rue de Rivoli in Paris doesn't have it, then sue my publisher, Prentice-Hall. If you don't, I will.

● *Your articles on automobiles are most interesting and informative. As you can see from my stationery and signature, I am interested in automobile safety and injury prevention. Each year I prepare an exhibit on this subject for the Academy. I am trying to get information on automobile suspensions and handling as regards safety. I understand that auto suspensions of stock cars are considerably altered and stiffened up for the stock car races at Daytona Beach and elsewhere for safety reasons. I also understand that for safety in high-speed driving you would greatly favor tying some of these loose-sprung automotive "balloons" to the ground by the use of heavier springs and shocks. Can*

Why are people throwing away both headlamps when one still lights?

Because a pair of G-E SUBURBAN Headlamps gives their 2-headlamp cars twice as much light where it's needed! *It's almost like driving a new 4-headlamp car* when you switch on the low beam of your new General Electric SUBURBAN Headlamps! Only G-E SUBURBAN Headlamps, among all the brands made for two-headlamp cars, have the low beam filament on focus to give you a "spotlight effect". This gives you twice as much light where you need it . . . down the right side of the road. So you see better in spite of the other car's lights . . . even if he fails to "dim" for you!

If you have a two-headlamp car, don't even wait for *one* headlamp to burn out. Have a pair of new General Electric SUBURBAN Headlamps installed and aimed today! See how much easier and more relaxing night driving can be. General Electric Company, Miniature Lamp Dept. M-024, Nela Park, Cleveland 12, Ohio.

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Tom McCahill reports on....

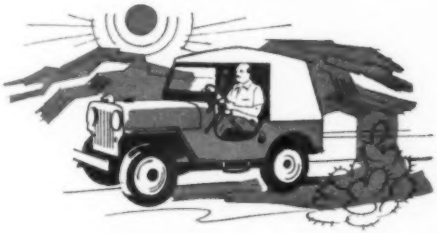
New Du Pont TELAR*: first Never Drain Anti-freeze & Summer Coolant

"One dark and stormy night about four years ago my phone rang, and I got the news. Du Pont had a brand new development in cooling system protection. They asked me to test it in my own cars—but strictly on the Q. T.

"I agreed to do it, but had a lot of doubts that any anti-freeze could live up to the claims they were making. They said it would last *year after year, without draining,* as long as the cooling system was in top shape!

"They called it a *summer coolant,* too. This, they explained, was because this squirrel juice had an amazing new life time rust inhibitor. Du Pont's new for-

mula stands up and stays fresh where others break down. This inhibitor completely protects all types of metals in cooling systems—including the new aluminum alloys. It doesn't just slide a filmy coat over the metal surfaces that can wear off—instead, it reacts with the metal, changing its chemistry to form a chemical armor against rust and corrosion. This means no rust clogging, with the result—no overheating.



"But this wasn't the only plum Du Pont was talking about. They had another claim that sounded as wild as a Killarney cat. They said the stuff would even act as a watchdog for me! 'It contains Color Check,' they said. If a serious cooling system failure should develop, allowing acids to contaminate the solution, Color Check will, in a matter of seconds, change the whole solution's color from wine red to warning yellow. This sounded pretty tough to believe, but I was anxious to get hold of some for personal testing.

"Well, I've been testing it in all my cars for four years now, and it's really been given the business—hard driving in temperatures ranging from 120 above to 20 below zero. Du Pont's product never broke down, and I never had it drained—and it has kept the cooling systems in all my test cars as clean as a tiger's tooth. This is the first cooling system protection that *goes in for keeps!*

"The name? Right up there in that big headline: 'Telar'. The price? Thought you'd never ask, for this will flip you like a Japanese acrobat. It actually costs less than regular anti-freeze because of its long-lasting properties—and you get four-season protection, year after year. *And* you only have to buy the degree of protection you need for your area. Take it from your old Uncle Tom . . . 'Telar'!"

"'Telar' goes in for keeps—only five clams a gallon at your servicing dealer."

*Trademark

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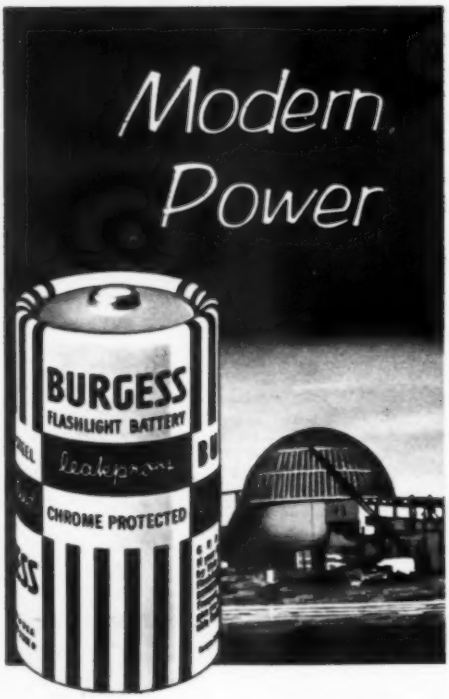

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Mail For McCahill

[*Continued from page 50*]

you suggest other experts in this field who agree?

Murray E. Gibbens, M.D.
American Academy of Orthopaedic Surgeons
Chicago, Ill.

Yes. Bill France, Smokey Yunick, Red Vogt, Bill Stroppe, Lee Petty, Fireball Roberts and Duane Carter—just to name a few. Nearly all Detroit engineers also know how to tie their balloons to the ground but the idiots in the sales divisions scream for softer and mushier rides, claiming this is what the public "demands"—which is ridiculous. As you undoubtedly know, in Detroit the sales boys outrank the engineers like Curtis LeMay outranks a buck private.

● *I was having an argument with a buddy of mine. He says that operating the electrical accessories such as the heater, radio, defroster and lights does not have any effect on the consumption of gasoline per mile on an automobile. I say it does. Who is right, and why?*

PFC Dusty Holtz
APO 162, N.Y., N.Y.

You are right, Dusty. Every electrical accessory in any car draws electricity which, as you know, comes from the battery and the generator and it does take horsepower to get it there. During professional economy runs the operators aren't even allowed to use the radio, as even this small amount of juice will cause the generator to work a bit extra. Tricksters in speed trials often overcharge their batteries and then disconnect the generator lead so there will be no draw. Incidentally, some air conditioners can knock down gas consumption as much as two to three miles per gallon. As Herman O'Toole, the Japanese acrobat, once said, "In this world you get nuthin' for nuthin'."

● *What is the principal cause of wear in automobiles?*

L. R. McCool
Sydney, Australia

Driving.

● *As I have just taken delivery on a Chrysler 300F, I read your article on this car in the May issue of MI with much interest. In this article you refer to the "Magi-Cruise outfit similar to the one Pontiac features." I will very much appreciate your advising me the name and address of the company which makes these outfits and whether they make a*

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Worn spark plugs waste lots of gas—so check your plugs every 5,000 miles!

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The longer your car burns oil, the more you blow good money right out of the exhaust, and the more wear your engine suffers. Now you can recondition your car's worn rings and cylinders WITHOUT BUYING EXTRA PARTS or TAKING THE ENGINE DOWN! Just squeeze a tube of the amazing HOLT'S PISTON SEAL WORN CYLINDER COMPENSATOR through spark plug openings into engine cylinders—as easy as squeezing toothpaste!

PISTON SEAL then floats into position around pistons. Engine heat causes expansion of compound, and a pliable self-lubricating seal is formed, taking up excessive clearance between piston and cylinder wall. The moment you start your engine up, this remarkable formula plates cylinder walls, pistons and piston rings with a smooth, metallic surface that lasts for 10,000 miles of driving!

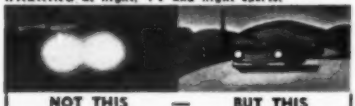
PISTON SEAL REDUCES OIL AND GAS CONSUMPTION . . . INCREASES COMPRESSION . . . CHECKS PISTON SLAP . . . IMPROVES PERFORMANCE AND PEP . . . RETARDS ENGINE WEAR . . . MAKES DRIVING A PLEASURE AGAIN! SAVES you from $50 to $150 on an engine overhaul! PISTON SEAL is made from a NATURAL MINERAL in combination with high-quality lubricants. Takes minutes to apply—gives you miles of trouble-free, economical driving. PISTON SEAL IS SAFE, APPROVED—the ORIGINAL, GENUINE product proved for 22 years in millions of cars.

Order a tube now on MONEY-BACK guarantee. Send only $4.95 for postpaid shipment—or COD plus postage.

STUYVESANT TRADING CO., INC., Dept. 403
130 W. 42nd St., New York 36, N. Y.

Eliminate Dangerous HEADLIGHT GLARE!

Now you can ELIMINATE dangerous GLARE at once with this amazing new invention—LITENITE NIGHT DRIVING GLASSES. These remarkable glasses are made of special amber lenses that reduce harmful glare. Headlamps of oncoming cars look like soft amber lights—and dangerous glare is softened instantly! Amazing, unbelievable until you actually put LITENITE on! LITENITE are NOT sunglasses but scientifically developed NIGHT LENSES used by airplane pilots to see more clearly through darkness and haze. Wonderful also for WALKING at night, TV and night sports.



NOT THIS — BUT THIS

Beautifully made with 24-KARAT GOLD-PLATED Aviation frame, comfortable temples, adjustable nose-pads, wide-angle lenses. FREE! Rich-looking Leatherette Carrying Case. TRY AT OUR RISK for full week. MONEY BACK if you don't say night driving is a pleasure! Send check or money order—or order COD plus postage.

REGULAR Style only $2.98. CLIP-ON Style for use over prescription glasses only $3.25. State STYLE and whether for MAN or WOMAN. DE LUXE Style with large Rhodium-Plated frame—$5.00.

STUYVESANT TRADING CO., INC., Dept. 407
130 W. 42nd St., New York 36, N. Y.

Mail For McCahill

[*Continued from page* 54]

model especially for the Chrysler 300F.

Frank O'D. Hunter
Maj. Gen., USAF, Ret.
Savannah, Ga.

I understand that Leon G. Arpin, P.O. Box 284, Caldwell, N.J. (who makes the "Magi-Cruise" for Pontiac) can supply a "Cruise-Lock" kit which will fit *any* American car.

● *If that 300F does 0-50 mph in 5.6 seconds and 50-100 mph in 12.8 seconds, how come the 0-100 mph time of 16.9 seconds? MI Mystery of the month?*

Buz Bennett
Syracuse, N.Y.

No mystery, Buz. In the 50-100 mph test the car is cruising in Drive range at a low-horsepower, steady 50 mph when the throttle is suddenly flattened. This causes the transmission to downshift and the car to dig out from a *steady* starting speed. In going from 0-100 mph with a flattened throttle, the car is already in a low gear and building up velocity with every wheel turn. On the way to 100 mph it is only at the 50 mph mark for an instant as it passes through the 50 mph range with far higher developed horsepower, plus accelerating momentum. This accounts for the second and a half difference in the two times you mentioned.

● *Being the authority on all things automotive, could you please supply me with any information on converting my car to steam? It's a 1958 Rambler. I'd like to know if anyone manufactures or imports the essentials (boiler and engine) in the United States, or perhaps you could print this and some of your readers could help me?*

Paul Tesnakis
635 Bay Street
Staten Island 4, N.Y.

You might try Gilbert Cope, Box 71, West Chester, Pa.

● *Please say something nice about the 1960 Volkswagen sedan. I am so tired of hearing the wisecracks about it. People gape as though I have two heads (which I don't have) when I'm driving the car, although I do realize that drivers of Volkswagens do look like owls riding on a beetle's back.*

Mercedes Berwin
Manistique, Mich.

Mercedes, old (or young) gal—whichever the case may be—don't let remarks bother you. The VW is *still* the best buy in America, dollar-for-dollar, of any car made. No other car can make this statement.

[*Continued on page* 58]

Cardiograph of Power!

Pre-ignition Meter Shows Superior Performance of ACs

This AC engineer is tuned in on the heartbeat of an engine. He's using a special AC pre-ignition meter to check spark plug performance. Here, the meter shows all eight AC Spark Plugs are firing perfectly. This electronic instrument senses the combustion chamber temperature in each cylinder. If dangerous, engine-damaging pre-ignition occurs, the temperature rises sharply. The sensitive meter connected to the cylinder, records the change. The needle moves over to the danger zone. This is just one of hundreds of proving ground and on-the-road tests that AC engineers perform to make certain that the spark plug recommended for your car gives you the best possible performance. When you replace spark plugs . . . at 10,000 miles . . . ask for ACs and be sure.

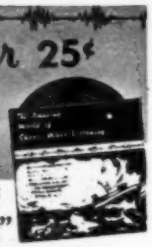
AC SPARK PLUG ✿ THE ELECTRONICS DIVISION OF GENERAL MOTORS

AC Fire-Ring Spark Plugs

THEY MUST BE THE BEST!

Special Offer 25¢

Hear these authentic recordings of dramatic events from



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S-107 receiver

$94.95

4 short wave bands plus standard broadcast. Phono and headset jacks, built-in speaker.

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DEPT. 17, CHICAGO 11, ILL.

Gentlemen: Please rush by return mail my recording, "The Amazing World of Short Wave Listening." I enclose 25¢.

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START YOUR OWN BUSINESS

$200 to $300 investment, make up to

THOUSANDS IN PROFITS

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. . . a treatment for brake linings & clutch facings Proven by Heavy Industry.

NO BRAKE FADE FROM HEAT, DAMPNESS, WEAR!

Longer, Safer Life for Car and Truck Brakes!

EXCLUSIVE DISTRIBUTORSHIPS NOW AVAILABLE

Send your name, address and this ad to:

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MEMBER OF

BRAND NAMES FOUNDATION, INC.

SATISFACTION

A BRAND NAME IS A MAKER'S REPUTATION

Brand Names Foundation, Inc.

Mail For McCahill

[Continued from page 56]

● *Please answer this one question and when you do answer it, no funny remarks. I would honestly like to know how you became a car expert.*

Barry Verbnec
Pittsburgh, Pa.

Without funny remarks I can't tell you.

● *My problem is this: I have a good late model car which I find it necessary to sell because of financial need. Since it is difficult for an individual to liquidate an automobile at anything near a fair price, I would appreciate any suggestion you could give. Is there any particular section of the nation in which the price of cars is higher than elsewhere?*

Pauline Long
Parsons, Kan.

Prices on the west coast are usually higher than in the east, due to transportation expenses, but then you couldn't get your car out there for nothing, either. If you could smuggle it into South America they'd pay you a fortune for it.

● *Uncle Tom, I'm a confused man. Would you mind telling me how you put yourself and the United States Air Force Thunderbirds into one Chrysler 300F? It seems like a pretty tight squeeze to me.*

Bob Schroff
Jamesburg, N.J.

You must be referring to the car in which I drove the Thunderbird team around during the pace lap at Daytona. The "trick" was that we had two pace cars. I used the Chrysler 300F as my official car for all the beach trials and for testing the traps but on the Speedway (where the Thunderbirds rode with me) my pace car was a big Buick convertible.

● *What is the most horrible thing you can think of to do to a car?*

Mary L. Boardman
Miami, Fla.

Dunk it in the ocean, then park it in the hot sun with all the windows up.

● *After reading all the ads, Uncle Tom, I'm confused. Every spark plug company claims they make the best plugs. Now you know this can't be true. How many really great spark plugs are made in this country?*

Lawrence Haines
New York, N.Y.

One.

—Tom McCahill

New Rubber Stamp Business Pays Beginners UP TO $9.20 an hr.

START AT HOME IN SPARE TIME WITH THIS LITTLE TABLE TOP MACHINE

The multi-million dollar Rubber Stamp Business—once controlled by a few big companies—is now being taken over by small home operators—one in each community throughout the U. S. Men and women who have this inexpensive machine can turn out huge quantities of Rubber Stamps with special wording that buyers once were forced to order from big cities. Material costing only 27¢ makes a stamp that sells for $1.80. The machine that does the work is simple and easy to operate and it turns out as many as six Rubber Stamps at a time each with different wording such as names, addresses, notices, stock numbers, prices and other "copy" needed by factories, offices and individuals. Working full capacity, it can earn as much as *$9.20 an hour for the operator!* Now you can get into the big-pay business yourself with your own home as headquarters. You don't need any experience. We supply everything, including complete instructions and eight ways to get business coming in fast. Start making up to $9.20 an hour from the very beginning. Cash in on the profitable Rubber Stamp business in your community right away.

TAKES UP ONLY 2 SQUARE FEET OF SPACE—WEIGHS ONLY 11 POUNDS!

118 PAGES MORE THAN 100 PICTURES

NEW WARNER SUCCESS PLAN

Tells How to Build—Step by Step—to Big Profits and Personal Independence. ***Read This Plan for Two Weeks Entirely At My Risk!***

In this amazing Plan you will find exact and detailed instructions for starting a Home Business in spare time—without giving up your present job and without risking the loss of a single pay check. The Warner Plan shows you—with pictures, photographs and drawings—just how to make Rubber Stamps just as good as those turned out by the big companies. It shows how to get orders *without canvassing or house-to-house selling.* It shows you how to expand, how to get others to work for you and how to be SURE of at least twice the money you make on your present job for a life of personal independence.

But don't make any decision now. Read the Plan first—entirely at my risk. Then—after you have made a careful investigation—after you have talked things over with your family—only then do you decide what you want to do.

The thing to do now is to get full details which I'll send you FREE no salesman will call to urge you to buy anything. Mail coupon now—or just send a postcard—and I'll see that complete information goes out to you by return mail—postpaid.

Cut Coupon on dotted line. Fill in name and address. Drop in Mail Box. NO STAMP NEEDED!

RUBBER STAMP DIVISION, Dept. R-4-L
1512 Jarvis Avenue, Chicago 26, Illinois

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Chicago, Illinois

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RUBBER STAMP DIVISION

1512 Jarvis Ave. Chicago 26, Illinois

Dept. R-4-L

Here's what the new WARNER PLAN Tells You about Making Money with RUBBER STAMPS

- Read the complete and fascinating Rubber Stamp story in a big 110-page Book recently published by the Warner Electric Company. The book is profusely illustrated with more than 100 pictures and photographs. *And you can read it for a full two weeks without risking a penny of your own money!*

HOW TO have fun **now** and at the same time provide for a secure and prosperous ***future.***

HOW TO check the advantages of operating a Rubber Stamp Business in your own community.

HOW TO visualize the scope of the Rubber Stamp market.

HOW TO make a Rubber Stamp (general outline).

HOW TO get acquainted with the "Tools of your Trade."

HOW TO make "Special" Rubber Stamps.

HOW TO get the right price for the Rubber stamps you make.

HOW TO figure costs so you will be sure of a substantial profit on all the work you turn out.

HOW TO set up your workshop.

HOW TO get the most out of Warner's "Eight Tested Sources for Getting Business."

HOW TO get started on a cash outlay so small that *you can get back your entire investment inside of two weeks.*

Remember how great cigarettes used to taste?

LUCKIES STILL DO

CHANGE TO LUCKIES

TOBACCO AND TASTE
TOO FINE TO FILTER

and get some taste for a change!

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Product of The American Tobacco Company — "Tobacco is our middle name"

HERE THEY ARE!
THE 1961 CARS!

THE 1961 automobile model year, which may turn out to be the most exciting you have ever seen, will be launched officially with the opening of the National Automobile Show in Detroit on October 15. Curiously enough, for the first time in 60 years of these exhibitions the Motor City itself will be the host and the cars of every American manufacturer will make their debut in spanking-new Cobo Hall, built for the purpose on the Detroit River waterfront. Previous shows, dating from 1900, were held in New York City. The thousands of spectators expected to pack Cobo Hall during the show's run from October 15-23 will see America's automobiles and trucks presented in ultra-dramatic settings designed to show them off to best advantage. Professional car-watchers no doubt will repeat, many times, the prophecy that 1961 will be one of tough competition. But this time, unlike previous battles for sales dominance, there is a new and important element contributing to the competitive slugfest.

(Text continued on page 64)

What you'll find in MI's SPECIAL NEW CAR SECTION:

Photos, Specifications of The 1961 Cars . . . . . Page 62

McCahill Tests The 1961 Ford . . . . . Page 72

McCahill Tests Buick's New Compact . . . . . Page 75

THE NEWEST COMPACTS

These brand-new models are expected to help the compacts capture almost 50 per cent of the American auto market in '61.

OLDSMOBILE F-85

DEBUTS as six-passenger sedan. It's 188.2 inches long, 71.6 inches wide and rides on 112-inch wheelbase. Aluminum V8 engine displaces 215 cubic inches, puts out 155 hp, is available with stick shift or automatic transmission. The 2,695-pound F-85 has 16-gallon capacity gas tank and is said to give 25 per cent more fuel economy than the big Olds. Four-door sedan and station wagon models will also be marketed in deluxe versions.

TOM McCAHILL'S report on the fourth new compact—the Buick Special—appears on page 75 of this issue. Uncle Tom will also be road-testing these compacts in future issues to give you his candid, behind-the-wheel views.

PONTIAC TEMPEST

EMERGES with front engine, rear transmission arrangement. L-4 engine is four-cylinder, 195-cubic-inch job. Tempest can also be had with 215-cubic inch V8 aluminum mill. Both power plants are available with floor-mounted stick shift, or automatic. Floor hump is virtually eliminated with transaxle arrangement. Both six-passenger sedan, station wagon come with 15-inch wheels, 112-inch wheelbase, are 189.3 inches long, 72.2 wide.

DODGE LANCER

BLOOD-BROTHER relationship to the Valiant is apparent in styling. Lancer steps out with six-cylinder engine available in 170 and 225 cubic inches with choice of stick shift or automatic transmission. Car is available in hardtop and station wagon models, in two series. New compact has 106.5-inch wheelbase, is 188.8 inches long, 72.4 inches wide and 53.3 inches high. The Lancer rolls on 13-inch wheels, has 24.9-cubic foot trunk space.

PLYMOUTH

STYLING has undergone sharp changes. Hood has been lengthened, rear end size reduced. Fins have given way to neatly sculptured rolled edges, minimum of side trim. Car comes in four series which include two and four-door sedan and hardtop models, station wagon with six or eight-cylinder engines, stick shift or pushbutton transmission. Wheelbase is 118 inches (122 on wagons) and length 209.5 inches. Wagons are 217.7 long.

THIS will be the debut of four brand-new compacts, an extremely significant development since the 1960 cars in this class won about 25 per cent of the market. Some highly-regarded prophets already are predicting that the popular compacts will account for almost 50 per cent of all new-car sales in 1961. In less than a decade the market pendulum of popularity has swung away from the medium-upper priced cars to the less costly offerings. In the 1960 model run,

VALIANT

ADDS new two-door sedan and hardtop to its existing line of four-door sedans and Suburban models. Car now has bolder grille, is available in V-100 and deluxe V-200 series. Valiant's power plant is six-cylinder overhead valve job that displaces 170 cubic inches. Available in stick shift or pushbutton transmission. Wheelbase is 106.5 inches. Length is 183.7 inches and height 53.3 inches on the six-passenger, second-year Valiant.

DART

INAUGURATES its second year with minor styling innovations which include revamped grille and slanted tail fins which sweep around rear deck. Taillights are also new. Dart buyers are offered a variety of engines ranging from 225-cubic inch Slant-6 to 383-cubic-inch V8. Car comes in three series—Seneca, Pioneer and Phoenix—with total of 24 body styles. Wheelbase is 118 inches, length 209.4 inches and the width 78.7 inches.

nearly eight out of every ten autos sold were in the lower-priced, standard-sized group or in the lowest-priced, smallest-sized (compact) class.

General Motors, giant of them all, is contributing heavily to this new trend by fathering three of '61's four new compacts. All will use the same body shell but each has distinctive styling and mechanical components. The three cars will bear the names of Buick Special,

[*Text continued on page* 68]

DODGE

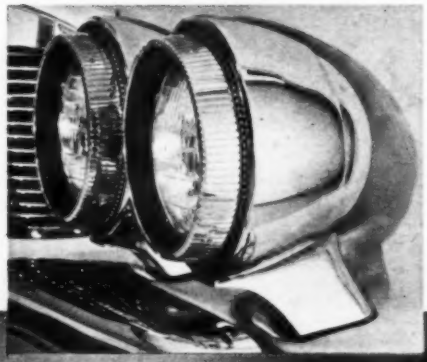
BIG-CAR entry is the 122-inch wheelbase Polara that will come in six models, including six, nine-passenger wagons. Styling changes include a new, full-width concave grille, slanted fins and reverse-sweep styling at the rear end. Taillights are recessed in fenders. Engines include 361 and 383-cubic-inch jobs with a choice of options. The Dodge Polara is 212.4 inches long, 78.7 inches wide, 54.9 inches high. Gas tank holds 20 gallons.

DE SOTO

MODIFIED its grille: the canted headlights are topped by a distinctive air scoop. The big car will be available in two and four-door hardtop models. It is powered by a 361-cubic-inch V8 that utilizes an alternator rather than a generator. The De Soto operates on standard gasoline. Sculptured fins begin at the front doors and soar back to the tail. The car has Chrysler's Unibody construction. Wheelbase is 122 inches, length is 215.6.

IMPERIAL

PREMIERES with its Custom, Crown and Le-Baron models. Luxury car comes with 413-cubic-inch V8 as standard engine. Grille features fine horizontal bars flanked by free-standing headlights that are reminiscent of the 1930s. Improvements have also been made in the chassis and engine compartment. The Imp sports a big 129-inch wheelbase, is 227.1 inches long, 81.7 wide.



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PONTIAC

BOWS with all-new look—recessed horizontal grille, square tail. Catalina, Ventura, Star Chief, Bonneville make up line. Catalina, Ventura have oval taillights, 119-inch wheelbase, 210-inch length. The top models have two triple-taillight clusters, 123-inch wheelbase, 217-inch length for new car year.

BUICK

UNVEILS brand-new body with frame that is 70 pounds lighter than last year. Line includes LeSabre, Invicta and Electra. The LeSabre and Invicta have 123-inch wheelbase, length of 213.2 inches, 56.3-inch height. Electra wheelbase is 126 inches, height 57.1. All of the 1961 Buicks are 78 inches wide.

Pontiac Tempest and Oldsmobile F-85.

Chrysler's Dodge Division, after a spectacular success with the Dart in the lower-priced group, will field the Lancer. In both styling and engineering details the Lancer is virtually the same as Valiant, only slightly longer.

In the field long dominated by Ford, Plymouth and Chevrolet we now have a shorter Mercury, Dart, Ambassador and Checker's Superba. In the compact array of cars for 1961 will be found 11 entrants—Buick Special, Tempest, F-85, Lancer, Valiant, Falcon, Corvair, the 100-inch wheelbase American, Comet, Lark and Rambler.

Thus, out of a total of 30 separate makes that Detroit will manufacture during the coming year, 18 of them—or 60 per cent—will be in the lower, or lowest-priced class and only 12 in the medium- and upper-priced brackets.

Now let's take a closer look at what's on tap for 1961. . .

Ford Motor Co.'s fast-selling Falcon remains almost the same in styling but picks up a new aluminum grille. A new optional 170-cubic-inch engine will be offered in 1961 in addition to the standard 144.3-inch, 85-hp mill.

For the low-down on the big Ford, see Uncle Tom McCahill's road test on page 72 of this issue.

The 1961 Mercury will be 4½ inches shorter, discarding its 1960 suit in favor of rounded corners, modest blades and sculptured-type rear end. For the first time in its history the line will offer a six-cylinder engine plus a new suspension system.

Mercury division's Comet which was a hot seller in 1960 remains basically unchanged. A new aluminum grille has been added. In addition to the 144.3 cubic inch engine, the Comet will offer an optional six displacing 170 cubic inches.

Lincoln is shifting emphasis in 1961 by dropping the regular Lincoln and Premiere series to concentrate on one line bearing the name of Lincoln-Continental, featuring all-new styling.

At Chrysler Corp. stylist Virgil Exner has reversed his field by bringing out a fin-less Plymouth. The car's new rear now has small round taillights, rounded corners and horizontal blade effect. Front treatment features a grille with a Marilyn Monroe curve in the middle and bomb-type headlights.

Valiant retains its 1960 styling. The line adds a two-door sedan and two-door hardtop and now has a chrome-on-black grille. Compression ratio of the 170-inch engine has been reduced to 8.2:1 for better performance on regular fuel. Air-conditioning will be offered as an option.

Dodge's new Lancer compact will offer the 225-cubic-inch slanted six engine producing 140 hp. The car can also be ordered with a 170-cubic-inch,

COMET

REMAINS basically the same as '60 model. Minor changes include new one-piece grille: headlights have been moved forward. Comet will be available in two and four-door sedan, station wagon models. The 114-inch wheelbase compact will give buyer a choice of two engines—standard 144.3 and optional 170-cubic-inch job. Wagons have 109.5-inch wheelbase. Sedans are 194.8 inches long, 54.5 inches high. Wagons are 191.8 inches long.

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FALCON

SPORTS new, full-width, convex-shaped aluminum grille, rectangular parking lights. Falcon offers two and four-door sedans and station wagons with 144.3 (standard) or optional 170-cubic-inch engine. Wheelbase on both sedans and wagons is 109.5 inches. Length of sedan is 181.2 inches. Wagons are 189 inches. Fuel tank capacity is 14 gallons. Sedan uses 6.00x13 tires; station wagon rides on 6.50x13 tires. Automatic transmission is optional.

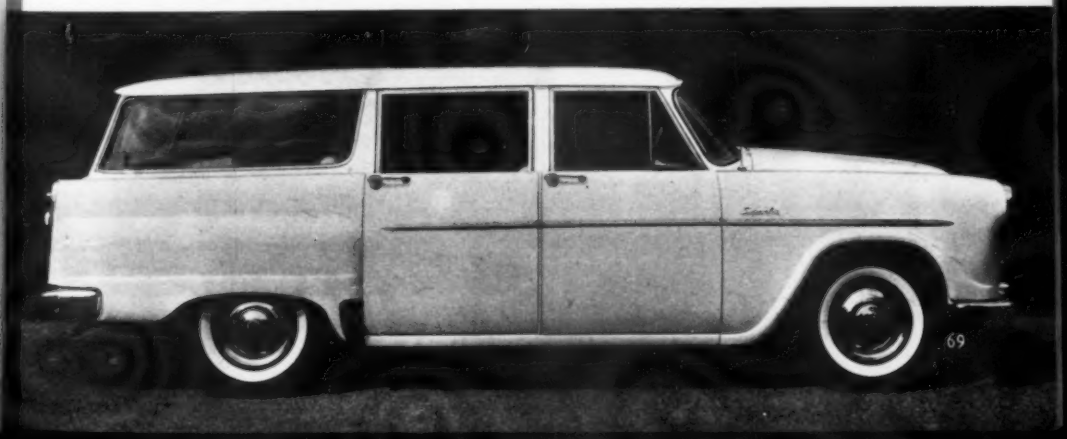
101-hp mill. Optional power brakes, steering, automatic transmission and air-conditioning will be available.

The Dart, longer by a fraction of an inch, has new rear quarters with horizontal taillights next to the bumper. The small fins have given way to what is called "jet-tube styling" and the new scoop grille has a rectangular pattern.

The big Dodge takes on a more luxu-

SUPERBA

MADE by Checker Motors Corp. has 120-inch wheelbase, 199.5-inch length, 75.5-inch width, totes 22-gallon gas tank. Roomy vehicle comes in four-door sedan and station wagon models. Sedan weighs 3,410 pounds. Wagon is 3,780 pounds. Engine is a six-cylinder Continental that develops 95 hp. A six-cylinder, 125-hp overhead valve Continental mill is optional. Sedans are priced at $2,542 and up. Station wagon is $2,896 without options.



LARK

HERALDS '61 with new six-cylinder, 170-cubic-inch overhead valve engine that develops 112 hp. Body changes include the "sculptured look"—larger rear window, a roofline an inch lower than last year, flatter hood, rear deck. Passengers will have more headroom. Body dimensions remain the same but new 113-inch wheelbase car with an eight-cylinder mill will be added to line. Regal has dual headlights, Deluxe only two.

rious appearance. The front end is very similar to the Dart's but the rear quarters have rounded taillights facing outward.

De Soto has simplified its lineup by offering only two-door and four-door hardtops. The car's exterior has the new rolled-edge style seen in the Plymouth but displays prominent fins.

Chrysler will market a new lower-

HAWK

GREETS auto year with bucket seats and a floor-mounted, four-speed synchromesh gearbox. Both will be options for sports car-minded drivers. The V8 engine, a 259-cubic-inch job that develops 210 hp, will be available with four-barrel carburetor, upping horsepower to 225. Body dimensions are same as last year's car with 120.5-inch wheelbase.

priced series called the Newport, which will be powered by a 361-cubic-inch V8 turning out 265 hp on regular fuel. The Windsor and New Yorker series remain at the top of the line. The 300G will emerge late in the year. In styling, Chrysler features canted headlights, high fins and a grille based on a former 300 style. Large horizontal taillights wrap around the rear corners and back-up lights are in the fins.

Imperial's most startling styling feature is free-standing dual headlights. Novel sparrow-strainer taillights point up a rear treatment which includes rearranged trim and continuation of the high-fin styling.

In the GM stable, the Chevrolet discards the gull-wing deck in favor of gently rounded edges that end at the rear. The front picks up a couple of cheese-cutter ornaments and the roofline is flatter. Chevy is shorter and the annoying wraparound dogleg windshield has been dropped.

Corvair retains its styling. Improvements in the air-cooled rear engine promise better performance. Interiors will be dressed up with fancier trim.

Pontiac's new compact, the Tempest, has a conventional front-end engine with an unconventional transaxle. A thin, flexible shaft (five-eighths of an inch in diameter with automatic transmission, three-quarters with manual shift) carries power from engine to transmission, virtually eliminating the driveshaft tunnel hump. Pontiac engineers adapted the regular V8 Pontiac power plant, minus the left-hand bank, leaving a four-cylinder mill with 195-cubic-inch displacement.

The regular-size Pontiac, for the third time in three years, emerges with a new front end and trim fins at the rear.

The F-85, Oldsmobile's new compact, has an aluminum V8 engine—a 215-cubic-inch mill that develops 155 hp. The six-passenger sedan is available with stick shift or automatic gearbox.

The 1961 Oldsmobile has a new look up front and features high, fin-type fenders, a new roof and a grille that dips in at the bottom. For the first time, the line will have a six-window, four-door hardtop. Length of the 88 is down 5½ inches to an even 212, while the 98 loses three inches and shrinks to 218. The 88 Rocket engine has been increased by 23 cubic inches to 394 inches.

You'll find photos, facts and figures on Buick's new compact, the Special, in Uncle Tom's test on page 75 of this issue.

The 1961 big Buick replaces last year's flaring blades on front and rear with down-sloping rolled corners and edges. The grille is enlarged and the round taillights give way to horizontal ovals. Buick's two engines displace 364 and 401 cubic inches and turn out 250 and 325 hp, respectively.

Cadillac has crisp new styling. Fin size is reduced and two models will be about nine inches shorter in length.

American Motors' styling comes in assorted forms ranging from completely new to slightly reworked on the American, Rambler and Ambassador. The American has been re-styled from end to end and now has a new grille and flatter roof. A convertible will be added to the line later in the year.

The regular Rambler shows the marks of AMC's "evolutionary" styling. The rear retains about the same appearance as in 1960. The front end shows up with a new grille and new, rounded-edge treatment and down-sloping hood.

The Ambassador for the first time departs in styling from its stablemate. Its grille is different, headlight design is more open than on the regular Rambler and the car gives the appearance of having a blunter nose.

Studebaker-Packard, facing a sales slump with its prize Lark, has tailored the front end to give the car a sleeker look and has added dual headlights. An improved six-cylinder engine will boost performance. The S-P Hawk, with its classic look, remains about the same.

Checker's Superba, still facing problems of expanding distribution, is unchanged in styling. It is offered in sedan and station wagon models.

The advent of the compacts and their wide acceptance has turned car sales slowly but surely toward the bottom of the price scale. The medium-priced bracket seems to be fighting a losing battle while the fine car field holds its own. But Detroit will be watching closely to see which way the buyer goes in 1960-61. •

McCAHILL TESTS....

THE 1961 FORD

This one, says Tom, is an open invitation to any buyer who wants hairy performance.

WIDTH is 1½ inches less than 1960 model. The famous bull's-eye taillights are back.

By Tom McCahill

A LOT of water, dead cats and empty celery tonic bottles have gone under the bridge since I made my first Ford test more than 14 years ago. Back in those days I was the only reporting car tester in the country and, you can take it from me, the factories didn't bubble over with joy at the prospect of someone with a typewriter analyzing their products. In fact, in my dusty files I have a number of letters from manufacturers saying, in effect, "We test our own cars. Who the hell needs you?" The manufacturers spent millions of dollars on advertising, none of which pointed out any weaknesses or defects in the cars, and they were not anxious to have some upstart come along and do it for popular consumption.

Getting my first Ford test took some doing. All car makers love to see pictures of their products and officials in the public prints. Even in the medieval days of automotive history, a guy with a camera was as welcome as money on rent day. Ford was my first target in 1945, when their post-World War II models were just making the scene. So I traveled to Dearborn and presented my photographer's credentials, saying I was after a cover for MECHANIX ILLUSTRATED. Under this guise I was received with open arms.

After two days of boring the public relations man assigned to my side (by spending two or three hours to set up each picture), he finally got tired and said, "You know your way around, Tom, I've got work to do back at the office—bring the car back to the garage when you're through with it." And away he went.

As soon as he was around the corner, the cameras were tossed into the back seat and the stop watches brought out. I spent the next three or four hours practically pulling this new job apart around hard bends and over railroad tracks at the River Rouge plant and making numerous brake tests and top speed runs. And this, kiddies, is how the

CLIMBING a proving-ground hill: will it carry Ford sales back to Big Three top place?

first test was obtained. In the following weeks I was forced to pull this same ruse on several other manufacturers. MI published the Ford story in February 1946, much to the amazement of the Ford Motor Co. That 1946 Ford was the first automobile I ever tested on these pages. The test you are about to read (I hope) right now marks the 16th article in an unbroken series of annual reports I have written on the new Fords.

The 1961 Ford incorporates a lot of goodies of the past in an attempt to gain back leadership as the hottest-selling car in the world. In 1957 and 1959 Ford nosed out its closest rival, Chevrolet, but for a lot of unexplained reasons, slipped from the top last year. The company men I talked with feel that the 1960 styling was what caused the sales drop.

Just recently I consulted a top industrial designer and personal friend about Ford's 1960 model slump. Many of my friends, like myself, thought the 1960 Ford was just about the best-looking Ford ever built—but the general public apparently failed to agree. My designer friend (who happens to work for a rival company) also felt the '60 Ford had top looks. As a matter of fact, according to him, the 1960 Ford design had just a little too much class for the average buyer. It looked like more money than either the Plymouth or Chevy but its top country club appearance made the Joe's Diner-set a little uncomfortable. Now, as we all know, the Joe's Diner-set comprises a major part of the market and their tastes must be catered to first. As another stylist in Detroit explained it, "Ford's 1960 styling was just a little too good for them." Be that as it may, what has Ford done for 1961?

From the rear door aft, the 1961 Ford is a combination. It is mostly 1957 Ford styling with a few 1959 overtones. It has the stubby '57 fin line and will be the only '61 Big Three car with fins—Chevy and Plymouth having gone to the rear-end bald look. Forward of the door it is another combination of former successful Ford products. It has a bit of Thunderbird in it, a touch of the '59 Ford

COMBO: forward it's T-Bird with touches of '57 and '59; aft it's reminiscent of the '57.

with a sprinkling of the '57. If you study it hard you'll see that the entire car, style-wise, has absolutely nothing new —just good, proven selling points lifted from former Ford Motor Co. models. If Ford has judged their market right for 1961, this should bounce them right back into the driver's seat.

Mechanically, the 1961 Fords are practically an exact counterpart of the '60 models. There are four engines available, ranging from the 223-cubic-inch Six to the barrelhouse 390-cubic-inch V8. The overall length, however, has been plucked down a bit from 213.6" in 1960 to 209.9" for 1961. All other specifications, such as the 55"-height, right through hip and leg room, are the same as the 1960 cars with one exception, the width, which will be 1½" less than in 1960. The models still sport the same nomenclature (Fairlane, Fairlane 500 and Galaxie) as a year earlier. In fact, you're pretty safe in saying that this *is* the 1960 Ford with a new suit. However, don't let this fact halt your personal inspection in anticipation of what the '61 Plymouth and Chevy will be like because I can assure you (having tested both of these) that they, like Ford, will more or less be 1960 cars with a change of outside clothing.

TEST CAR SPECS

MODEL TESTED: **1961 Ford Fairlane**

ENGINE: **V8** cyls; **390** cubic ins; **375** brake hp; **427** ft-lbs max torque; **10.6** to **1** compression ratio. Bore **4.05** ins; stroke **3.78** ins. Fuel required: Premium. Standard axle ratio: **3.58** (Test car: 4.89). Wheelbase **119** ins; length **209.9** ins; height **55** ins; width **79.9** ins; front tread **61** ins; rear tread **60** ins. Weight **3,785** lbs. Gas tank capacity **20** gals. Turning circle diameter **41.2** ft. Tire size **7.50X14.**

PERFORMANCE: **0-60** mph, **7.5** secs. Top speed **120 plus** mph. All times recorded on corrected speedometer.

To test the prowess of Henry's Number One offering, I journeyed into the wilds of Michigan. Some of you may find this hard to believe but on many of these pre-production tests there is a tremendous scarcity of models available for real running. In fact, my test car resembled the General Electric Labs plus parts of an atomic sub. I drove the Fairlane you see in the pictures but couldn't give it a full wring-out as it was brand-new and un-tuned. My wring-out car was a drab, blacked-out version, about as sexy-looking as a dead polliwog. I did, however, put the picture car through a series [*Continued on page* 156]

Mc CAHILL TESTS....

BUICK'S NEW COMPACT

The 2,700-pound rig with a V-8 aluminum mill sports snappy styling, seats four riders comfortably.

By Tom McCahill

THE Buick Special is the latest hot cat entry into the ever-growing compact car field. This new Special is a little less compact than some and has more power than any we've tested up to this writing. As with dames, whiskey and horses, everyone has his own conception of the ideal and opinions vary like the pebbles in a cement mixer. Buick's idea of a compact car is many degrees to the right of the other, earlier ones.

When I arrived at the General Motors Proving Grounds, I was met by Lowell A. Kintigh, Chief Engineer of Buick, who gave me the pitch on what his new Special was all about. Kintigh said the Buick people believe in the interest of safety and satisfaction to the owner, that

SPECIAL has dual headlights, uncluttered grillle, looks very much like big '61 brother.

COMPACT has clean, wide-styled rear with taillights neatly placed in fender ends.

SIDE VIEW of four-door Special shows the rounded, missile-like front fender styling.

the performance difference and feel between a compact and any big car should not be as extreme as was true of some of the first domestic smallies. He said that many of the compacts Buick expects to sell will be sold to buyers who also own a big family car. And, he said, the single-car owner of a compact should be able to feel that his Special is not too far off the general pace. To accomplish these aims, Buick built this new model so that its interior specifications would closely compare, size-wise, with the typical cars of seven or eight years ago.

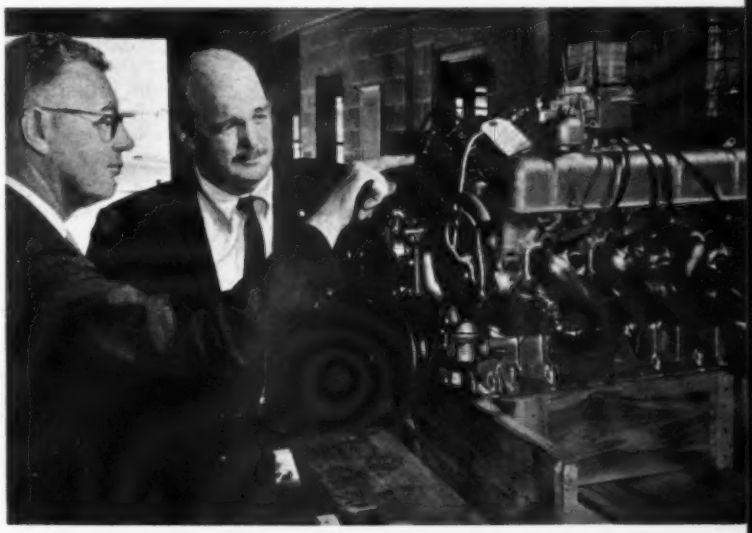
Buick felt that economy with gasoline was desirable but that this factor could be overdone, so an entirely new small V8 engine was designed. This engine displaces 215 cubic inches, which is the largest compact mill I have tested to date. Naturally, it has overhead valves. It develops 155 hp and 220 foot-pounds of torque. Now, this engine which would be considered slightly more than flea-powered in a full-size American car delivers a barrel of moxie to this compact Special. The entire unit in sedan form weighs a hair over 2,700 pounds. This is about 1,000 pounds less than the average small-big car today.

I tested two jobs, one with Buick's

"APPEARANCE is not only trim but functional as well," says Tom of good-looking car.

automatic transmission, the other with a stick shift. The automatic job averaged out 0-60 mph at 14 seconds on the nose. The stick shift, however, averaged 11.8 seconds, which means that with standard equipment the new Buick compact is the fastest of the Big Three shrimps to date.

The Special is the first of the '61 compacts I have tested, although I have advance dope on several others. And it's evident that the "bigger, more powerful" sales pitch is still very much with us. Though there are plans afoot by one company to bring out a really small car of Dauphine-VW engine proportions, the customary contest is now definitely under way. All indications are that



UNCLE TOM gets the lowdown from Lowell A. Kintigh, Chief Engineer of Buick, on the brand-new 155-hp aluminum engine. Top speed: 98 mph.

TRUNK offers plenty of room for storage. Note how spare tire lies flat on the floor.

FAMOUS fender portholes featured on Buick a few years ago return to enhance styling.

WIDE rear window offers maximum visibility and does not intrude into car's roof.

we're facing a horsepower and size race in what we've just come to know as "compact" cars. If this isn't a silly situation, then I'm King of the Cherokee Indians. Two or three of the established cars in this field have already sent out advance smoke signals that they'll have bigger, more powerful engines for 1961 —and one claims "more body size." If this trend really gets rolling (and I can see nothing that will stop it at this writing, aside from serious buyer protest), by this time two years from now don't be surprised if we have compact cars of more than 300 horsepower bragging that they are several inches longer than a Cadillac!

Some of you may think I'm exaggerating, or just kidding, but believe me I've seen similar things happen in Detroit before. At one time the basic premise of all small-automobile designers was to provide "a car with adequate size for average family transportation, that will give excellent gas mileage on regular fuel, and that will be inexpensive to buy, maintain and operate." As Blackthorne Finnegan once said, "Horsepower and performance cost money." Unless the compacts not only can keep the initial cost down but also maintain fuel consumption at about where it was in the 1960 models, this small-car craze which is now sweeping the country could easily run into a stone wall.

The big question facing a lot of the companies is "Just what kind of gas economy will satisfy the typical buyer?" If he wants 35 mpg or more, and if this is really important to him, we have nothing to offer. The field is wide open for such cars as the Volkswagen, Austin 850, Dauphine and some others that can give this sort of economy. The Buick boys with their new V8 think the public wants a compromise somewhere between the extreme mileages delivered by a good small import and the gluttonous full-size American family car. They figure that many Americans will pay for a little more power and performance in the form of added gas consumption, provided they can do this on regular gasoline—which means a savings of from three to seven cents a gallon, regardless of mileage.

This new Buick Special has a compression ratio of 8.8:1. This, as they *must* know, is getting very close to the wire—and definitely over the wire for some regular gasolines. There are a number of regular gases on the market that will take up to 8.8:1 without pinging but there are definitely some that won't, especially after a little carbon has built up inside the combustion chambers from slow suburban running. If I were in charge of Buick Service, I'd make it a point to acquaint all my dealer service man- [*Continued on page* 158]

TEST CAR SPECS

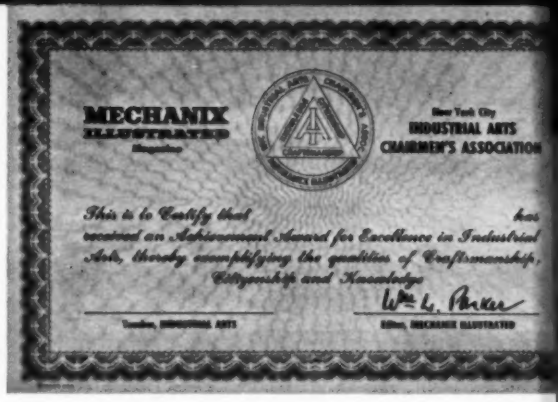
MODEL TESTED: **1961 Buick Special four-door sedan**
ENGINE: **V8** cyls; **215** cubic ins; **155** brake hp; **220** ft-lbs max torque; **8.8** to **1** compression ratio. Bore **3.5** ins; stroke **2.8** ins. Fuel required: Regular. Standard axle ratio: **3.36** with stick shift; **3.08** with automatic. Wheelbase **112** ins; length **188.4** ins; height **52.5** ins; width **71.3** ins; front tread **56** ins; rear tread **56** ins. Weight **2,711** lbs. Gas tank capacity **16** gals. Turning circle diameter **38.1** ft. Tire size **6.50X13.**
PERFORMANCE: **0-30** mph, **3.9** secs with stick shift; **5.1** secs with automatic; **0-60** mph, **11.8** secs with stick shift; **14** secs with automatic; **40-60** mph, **5.8** secs with stick shift; **5.4** with automatic. Top speed **98** mph. All times recorded on corrected speedometer.

mimi

A SOFT SPEAKER for those late, late intimate hours when all the others are asleep—that's the TV Pillow Speaker on which our MIMI is resting her shell-like ear. When she plugs into the breaker jack that comes with the kit the regular speaker is cut out and all the audio pours inside the foam rubber. Corduroy cover unzips for washing. Installing the TV Pillow Speaker takes ten minutes if you follow the instructions, says MIMI. Sold by Speak-A Pillow, Box 12152, Dept. 152, Ft. Worth, Texas, for $9.95.

MI's NEW HIGH SCHOOL ACHIEVEMENT AWARDS

A NEW Achievement Award to recognize outstanding accomplishments by Industrial Arts students in New York City high schools has been inaugurated by MI in cooperation with the Industrial Arts Chairmen's Association, an organization of supervisory teachers in the city. The award goes to the top student in each IA class, including woodworking, metalworking, graphic arts and other skills. Winners receive an engraved certificate (shown at right) and a sterling-silver pin (above). The pin is 5/8" in diameter, slightly smaller than a dime, and has a pinette attachment for wear on lapel, tie, shirt pocket or letter sweater. Although the award is now confined to New York, MI is studying the feasibility of making it available on a national scale. •


MECHANIX ILLUSTRATED

New York City
INDUSTRIAL ARTS CHAIRMEN'S ASSOCIATION

This is to Certify that has received an Achievement Award for Excellence in Industrial Arts, thereby exemplifying the qualities of Craftsmanship, Citizenship and Knowledge

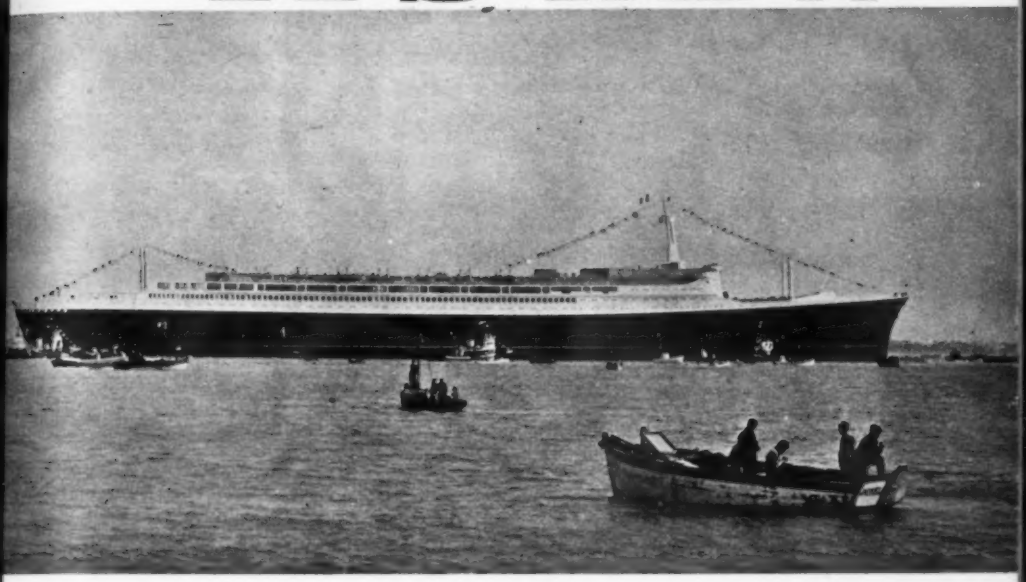
Wm. L. Parker

Teacher, INDUSTRIAL ARTS — Editor, MECHANIX ILLUSTRATED

ENGRAVED CERTIFICATE and sterling-silver pin at top cite character and work of Industrial Arts students.

HAMMING it up, Stephen Schwartz, 17, one of 974 Achievement Award winners in New York City, focuses reflecting telescope he built on pin held by his instructor, Howard Natter.

IT'S NEW



LONGEST LINER: French Line's 2,000-passenger France is the longest liner ever at 1,035 feet. She's six feet longer, two knots faster than Normandie, uses 60 per cent as much fuel.

ROWEBOTERIA, a food vendor by Rowe Mfg., Whippany, N. J., sells 130 food and drink items. Great for the old night shift.

FLYING TELESCOPE to ride in nose cone of Skylark rocket, take photos of sky out beyond atmosphere, is of British design.

CONTINUED . . .

HALF-PINT HYDROPLANE, skippered by five-year-old Kalleen Holl, Seattle, has chain saw motor. Kalleen's pop built craft of plywood.

PARKING TOWER in Milan, Italy, lifts, parks, returns cars to street automatically.

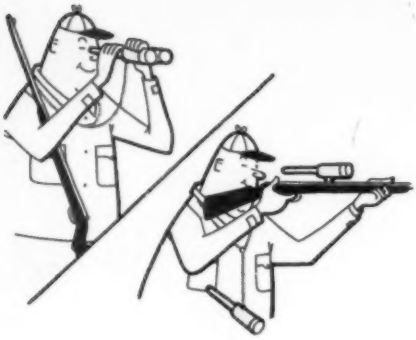
SOLAROTA, English, coin-operated, turns customer before sun lamp for two minutes.

EGG FRYER fries 12 distinct servings at once; 16 are used in Va. state pen.

VACUUM-CLEANING, three minutes for sixpence, is one of the services offered by this service station in London.

MUSIC and waterfalls via earphones block pain of a tooth extraction, claims Dr. W. Gardner, Cambridge, Mass.

"CHEESE!"—and everyone smiles. These six sets of ivories were snapped at the RAF dental center, England.



FIELD GLASSES which come apart; one section could then be used as rifle scope for distance shots. R. Borgwardt, Beloit, Wis.

ICE CREAM scoop heated electrically for easier dishing out of the hard-frozen dessert. Dale Margetts, Salt Lake City, Utah.

INVENTIONS WANTED!

Is there a gadget you think should be invented? If so, send its description on a postcard to Inventions Wanted Editor, MECHANIX ILLUSTRATED, 67 West 44th St., New York 36, N. Y Each one printed will be awarded $5. Entries not selected cannot be acknowledged or returned.

SMALL umbrellas to shield valuable rose bushes from overexposure to sun or rain. Tom Moreau, Grosse Pointe Woods, Mich.

STURDY meshed screen built into gas tank filler pipe to thwart any would-be gas siphoners. Andrew Vena, Philadelphia, Pa.

SCALES built into one-quarter and one-half ton trucks so that driver won't overload vehicle. Tommy Douglass, Perryville, Md.

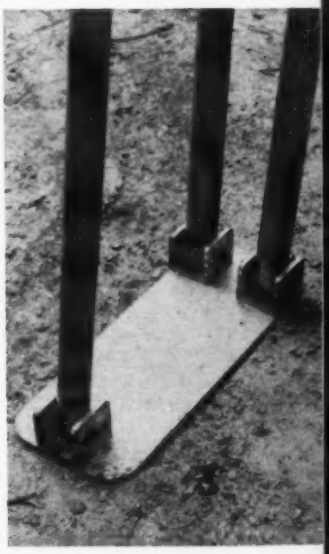
MEN IN THE AIR

TWELVE feet is the height of Wayne Deming on the stilts he devised for pruning his fruit trees in Clovis, Calif. The aluminum stilts allow the user to walk almost normally, including bending the knees, Deming claims. This balance is achieved by the ability of the three tubes on each stilt to lean while the foot plate remains flat on the ground. The front aluminum pole of each stilt helps make walking easier. Each one is attached to a swivel on the underside of the footrest and extends down to a front swivel on the base platform, making the lower "foot" react just like the real one. •

STILTS put Deming and his son, Douglas, 12 ft. above ground, make pruning fruit trees a cinch.

DONNING stilts. Deming sits on top of a ladder. Heavy knee straps assist in balance and eliminate the stiff, waddling motion inherent in other types of stilts, says the inventor.

LIGHTWEIGHT stilts weigh only about seven pounds each. Front aluminum pole under each foot extends down to base platform and aids in control of the stilts while person is aloft. Deming calls it "toe control," says anyone can use these stilts.



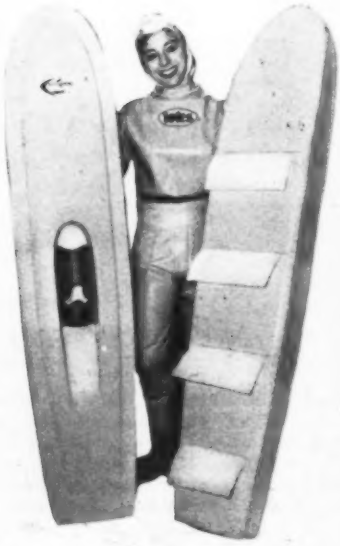
BASE plate is attached to three poles by link pins which allow flexible swiveling as wearer bends leg and knee in walking. Base plate is always flat on ground.

VTOL WITH 4 PROPS

HERE'S the Fairchild VZ-5Fa VTOL, which is under development for the Army. In the upper photo craft is in tail-high, horizontal flight attitude. To attain VTOL the four props blow the lipstream back over the wing and large flaps at the trailing edge tilt slipstream down, bringing craft into its nose-high attitude (lower photo). A single turbine engine powers the VZ-5Fa. •

Now You Can Walk On Water

WATER WALKERS have flexible flaps underneath for traction in the water. They are made of Styrofoam covered with a new hard plastic. Trade name is Water Shoes.



HIGH-FLOATING walkers in use on the Chicago River. Presumably because shoes would be good for retrieving wildfowl in season, model wears warm, waterproof suit.

SILVER BARS found in a shored-up cave in the mother lode country near Sacramento. Detector in photo, a Fisher Treasure Scout, discovered the treasure.

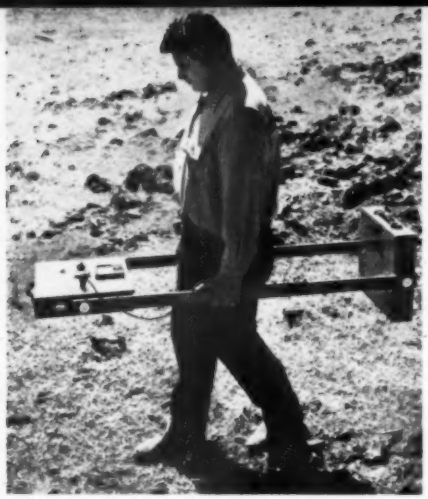
THEY OUTFIT TREASURE-HUNTERS

By John W. Aberle

THERE was once a GI who listened to stories told by Filipino guerrillas of a cache of gold buried by retreating Japanese soldiers. Taking his discharge in Manila, the ex-soldier wired Gerhard and Curt Fisher of Palo Alto, Calif., makers of treasure-detectors, for some equipment. One early morning after six weeks of hunting the detector started to buzz. After an hour of digging the gold was discovered

SPANISH COINS found under a crumbled adobe house in northern California.

CONTINUED...



HEAVY DUTY M-Scope Type MA is for deep probing by prospectors, mining engineers.

EXPLORER MODEL in use. Transmitter is carried behind user, receiver is forward.

in an oil drum embedded in concrete.

That sort of story is all in the day's work for the Fisher brothers, who have been helping treasure hunters for years. It began in 1929 when Gerhard Fisher invented the detector while working as an electronics research engineer for the Federal Telegraph Company of Palo Alto. Curt Fisher was a shop foreman in the same company at the time. In 1932 Gerhard took his savings, which amounted to $300, and formed a company, using his garage as a factory.

Over the years Curt Fisher has become a sort of consultant on the disposal of newly-found wealth. On the day I talked to him he had a call from the wilds of Mexico. A treasure hunter had found a pile of silver bars and a mound of silver coins. "We can hide the bars so no one will know we have them," the caller said, "but the coins will have to be moved in saddle packs. Bandits will be sure to notice." Curt's advice: "Play it safe, and leave the coins. Take the bars to Mexico City, put them in a safe deposit vault, and contact a bank. Keep your mouths shut, and when news of the discovery dies down, go back after the coins with an armed guard."

Curt Fisher's ideas have not always been accepted. Back in 1932, when he and Gerhard tested their invention in California's gold fields, people in Palo Alto shook their heads. A local banker from whom Curt attempted to solicit a loan, said, "Why should I let you go adventuring with my depositors' money?"

Three days later, the Fishers' adventuring paid off when Palo Alto was without water, due to a hidden break in the water main. Workmen couldn't trace the pipe. Curt says, "People thought I was crazy when I showed up holding a gadget that looked like a carpet sweeper with earphones attached." The gadget quickly located the pipe and the break was found. The banker made the loan.

"When we started out in 1932," says Curt, "we spent most of our capital on magazine advertisements. Each day we waited anxiously for the mailman. When an order came in, we built the detector, painted the exterior, made the shipping crate, and took the whole thing down to the express company in our automobile. Since we couldn't afford to manufacture for stock, we tried to fill each order the day it arrived. If there were several orders we continued working until each was filled. For many years we never took a day off."

Today the company, Fisher Research Laboratory, Inc., occupies a 16,000

square foot building. Sales range between $800,000 and $1,000,000 per year. The volume of detector sales is about 40 per cent of these figures. The Fishers employ 60 people making three models, the *Treasure Scout*, which sells for $59.50, the *Fisher T-10*, selling for $127.50, and the *Explorer*, which sells for $158.50.

Each detector consists of a directional transmitter, together with a directional receiver. Current is supplied by batteries. The transmitter generates an electromagnetic field in any metal object below the earth's surface. The range in depth is 2½ feet for the Treasure Scout, 4½ feet for the T-10 and 20 feet for [*Continued on page* 160]

JEWEL BOX of coins was found by W. D. Thompson with detector. With it were turquoises, teamster's knife.

ODDS AND ENDS found along the Oregon Trail with a detector by historians searching for the Trail itself.

OUTDOORS
with
W. Scott Duncan

LEARN HOW TO GET LOST

GUIDES and forest wardens are often called upon to warn vacationers, anglers and hunters against getting lost in the woods. As they voice their warning they steel themselves against what they nearly always hear in reply—the words they dread most: "Oh, we won't get lost. We're not going far."

Of course, city folks—and that means people who have never learned the ways of the woods—can get lost without going very far. It happens all the time and it's so unexpected that the victim often panics. Panic kills and injures more people lost in the woods than any other danger. In a panic men will throw away the guns, food and clothing they need to survive in the woods; they run wildly into trees and over cliffs—directly away from help—or they wander in ever-widening circles. Elderly people exhaust themselves and suffer heart attacks and death from exposure.

To avoid these disasters the traveler must begin by recognizing, before he ever goes into a wilderness, that he may very well lose his way. This is no disgrace. Experienced woodsmen can get lost in strange country. It is what you do about it when you get lost that [*Continued on page* 161]

BRIGHT IDEA AWARD
MECHANIX ILLUSTRATED

KIT is made by Johnson-Weiler, Box 3033, Hampton Station, Milwaukee 18, Wis. The case is watertight. $2.

Pocket-Size Survival Kit

WHILE you couldn't possibly cram W. Scott Duncan's recommended survival gear (see opposite page) into a pocket, there *is* a pocket-size survival kit that would be handy to have on you all the time while touring the boondocks.

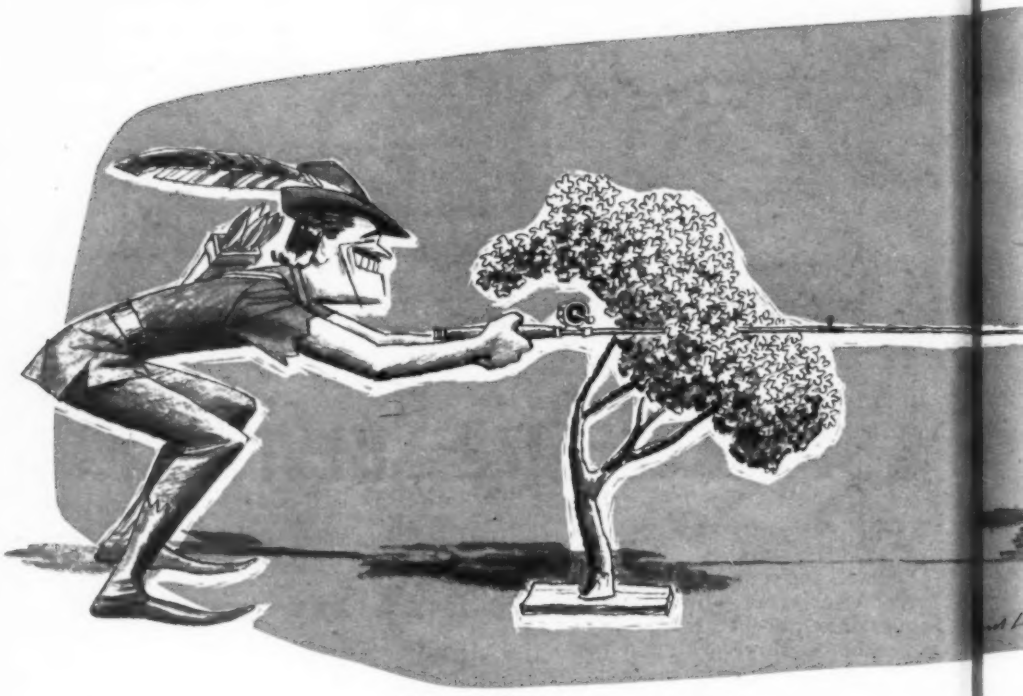
The kit contains 17 items and a 16-page booklet, all in a waterproof plastic case. First aid items include iodine swabs, Band-aids, tape, ointment, gauze pads, gauze bandage and safety pins. The survival contents are compass, knife, signal mirror, candle, pencil, paper, nylon leader, fish hooks, cloth-and-paper clip. The booklet describes and illustrates first aid and survival procedures. Topics covered include snake bite, shock, hemorrhage, fractures, heat and cold injuries, strains, sprains, artificial respiration, finding your way back, fire-building, edible plants and catchable game. •

WIN $50

MI will award $50 each month to the first person who tells us of a new and useful gadget that is patented and in production. Manufacturers are also eligible for this award. Pictures and a description should be sent to Bright Ideas Editor, Mechanix Illustrated, 67 West 44th Street, New York 36, N. Y.

CONTENTS, packed, go easily into a shirt pocket; unpacked they make quite a spread. Booklet's at top.

This Will



By Carl Sifakis

IT'S not easy to tickle a man to death——but it has been done. Ancient Chinese torture was one delirious way of taking all the fun out of life. The Chinese would clamp their victim's bare feet in a vise and let the ticklers go to work on his soles with feathers. If the boys were in a lazy mood they would coat the laughing one's soles with honey or a fishy paste and lure some hungry geese or cats to lick it off. It was a devilish way to send one on to his honorable ancestors.

The fact that tickling is not always a laughing matter is also pointed up by Webster. He gives one definition of a tickle as "to whip; chastise; to beat." However, scientists say that it's a good thing we are all ticklish to some extent. Babies often get their first laugh from a tickle and some experts claim that pleasure itself is a sort of "diffuse sensation of the tickle." Psychologist James Scully has described ticklishness as the "germ of a sense of fun."

Tickling can also be hazardous. The National Safety Council has long frowned on any ticklish horseplay under potentially dangerous circumstances. Take the case of the newlyweds who left their reception by car. The bride cuddled up to her husband and playfully tickled him on the back of the neck. The groom roared and let go of the wheel. Luckily, the couple survived the crash and were able to complete their honeymoon in adjoining hospital rooms.

The Council also views on-the-job tickling with alarm and many indus-

Tickle You

HOLLYWOOD star Douglas Fairbanks, Sr., created pandemonium on sets with ticklish antics using a fishing pole and feather.

trial firms appeal to employees to desist on the grounds that a sensitive person may leap into a vat of molten metal or injure himself with a machine.

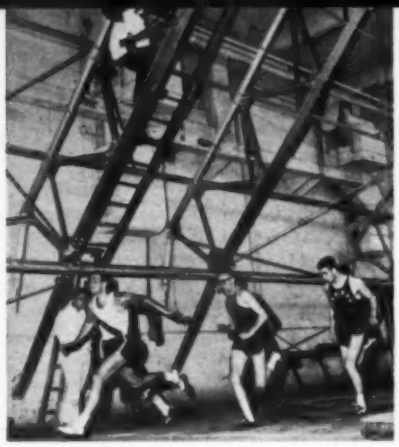
A less tragic case of this sort occurred not long ago in Elizabeth, N. J., when a railroad employee was tickled by a co-worker and, with a cry of uncontrollable joy, flew through the air landing on top of the foreman. The foreman promptly belted the victim, fracturing his jaw. The foreman wasn't tickled when he had to pay $500 damages.

What exactly is a tickle? Scientists don't quite know. Generally they agree we have four "cutaneous" sensations, which are derived from the skin. They are touch or pressure, pain, warmth and cold. Some experts hold ticklishness is part of touch. If, for example, a fine hair is applied to points on the skin of a blindfolded person, he will recognize the pressure at certain points and not at others.

Other re- [*Continued on page* 164]

TICKLISH person may howl uproariously at the mere gesture of an approaching tickle.

NEWLYWEDS were on honeymoon trip when wife tickled hubby. Car cracked up.

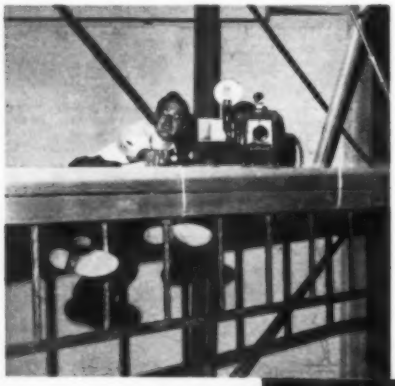


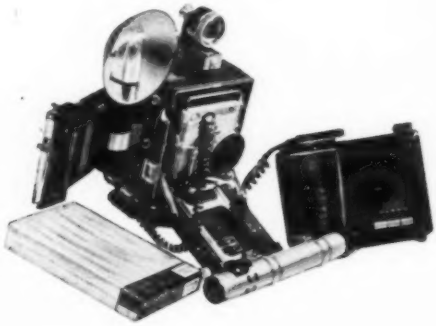
PERCHED above finish line on 16-foot ladder in Alumni Memorial Field House, Avery has clamped camera to a girder.

PHOTO-FINISH CAMERA

PICKING the winner in a track meet is a tough problem for judges because several runners often appear to break the tape at the same time. However, Bill Avery, a 21-year-old Denison University student at Granville, Ohio, may have solved the dilemma. Avery, using a 4x5 Speed Graphic with a wide-angle lens, put a Polaroid back on his camera to shoot film that develops in a minute, and took pictures from a ladder above the finish line. The photo-finish method isn't perfect yet but may be the key to judging future track meets.—*Dave Grube*

LOFTY cameraman has camera pre-aimed and focused with remote control shutter hooked up to shoot sprinters.

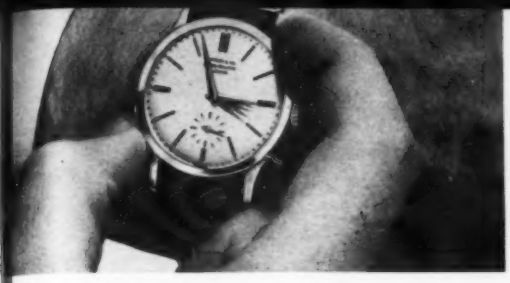




SPEED GRAPHIC camera is loaded with 4x5 Polaroid film and uses Braun Strobe light.

PHOTO-FINISH shows the winner breaking the tape. Film allows the judges to give results of the race in 60 seconds, the time it takes to develop film in camera.

NOW SEE THIS!



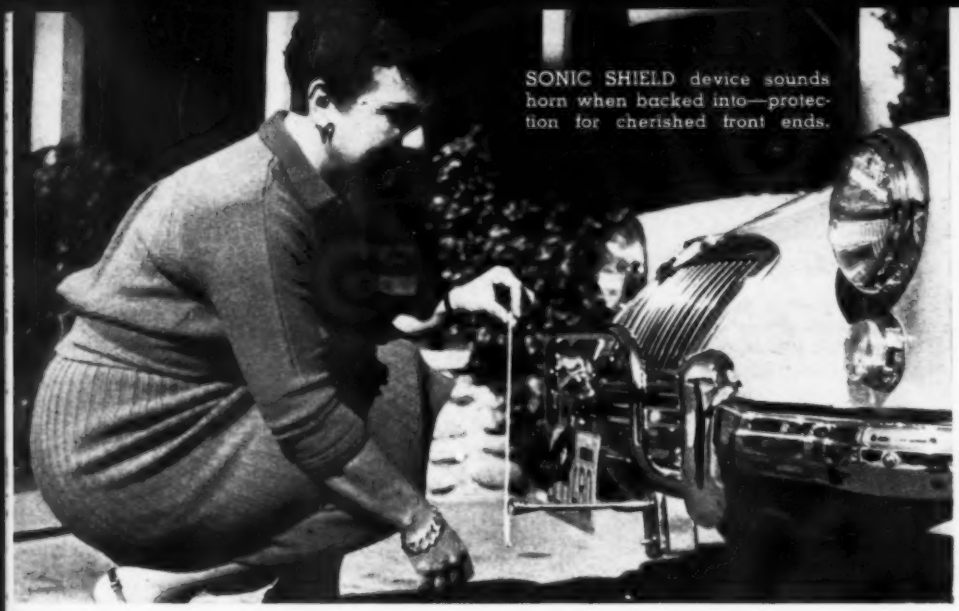
TIME ZONER watch, Swiss-made, is for jet age travelers. Press a button and the hour hand slips ahead one hour (or back one hour) without slowing beat of movement.

SYNTHETIC SIGHT for the blind picks up images of obstacles, relays impulse pictures to palm of hand so that user can not only sense obstacle but identify it.

HYDROSTREAK, 21-foot experimental boat built for Navy testing by Hughes Tool Co., rides not on water but on air cushion held in place by high-pressure "walls" of water.

AIR NAVIGATION system uses computer to position map of half the world inside a glass hemisphere, projects area plane is flying over on screen. An IBM device.

OUTBOARD CONTROL, Canadian, uses one lever for throttle and shift. Demonstration boat has both wheel- and side-mounted units. Lake Controls, Inc., Buffalo, N. Y.



SONIC SHIELD device sounds horn when backed into—protection for cherished front ends.

THEY MAKE *Sports Cars* EVEN SPORTIER

REGULAR CUSTOMER asks Marion's advice on how to care for trophy as well as car.

FIAT FROCK goes on in a few seconds, looks neat, keeps polish bright and new.

MONEY MAKING IDEA

IT was ten years ago that a new MG owner named Marion Weber decided to make a cover for her pet car. Her daughter dubbed the cloth the MG Mitten and a number of other MG owners asked to have Mittens made up for their own little cars. That was the beginning of MG Mitten, Inc., a $200,000 family business in a seven-room house at 1127 East Green Street, Pasadena, Calif. MG Mitten went on to other custom covers: Porsche Parkas, Jaguar Jackets, Triumph Tunics, Volvo Vests, T-Bird Tepees—all these are now standard items and all in demand. The secret of this success story is the way sports car people dote on their cars. Besides the covers, Marion (as her chummy clientele all call her) sells extras like hardwood steering wheels and dashes, emblems, car-care products like wax and cleansers, sports car clothes, crash helmets, etc. The store is more like a club than an emporium.—*Bob Willett*

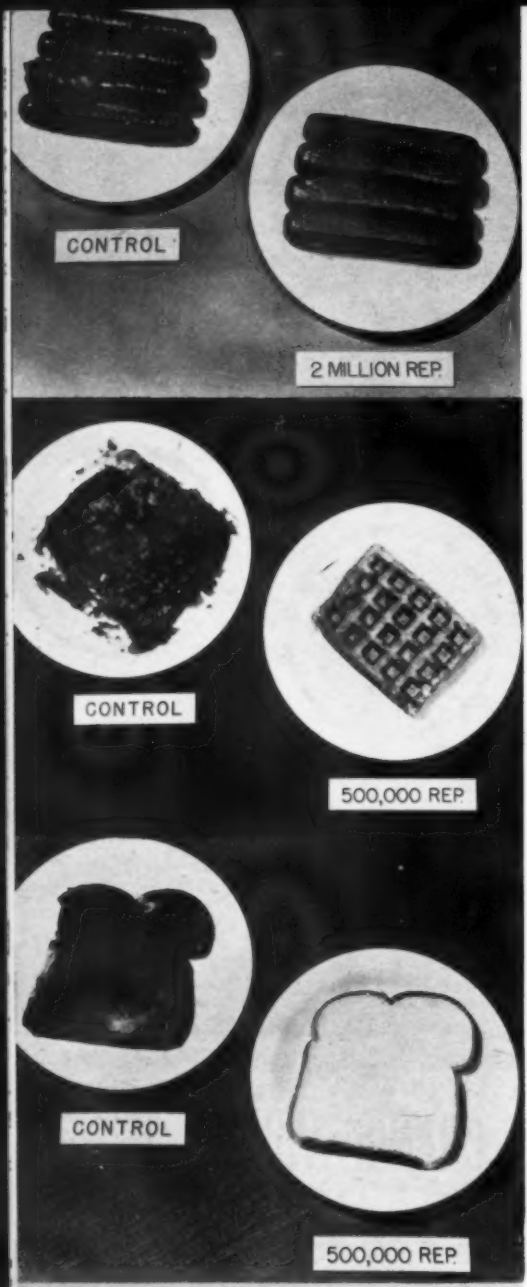
IRRADIATION will pour blessings on human life around the world.

THE BEAM THAT WILL CHANGE YOUR LIFE

By Ken Gilmore

AN ENGINEER in the General Electric Laboratory in Milwaukee, Wis., put two ordinary plastic squeeze bottles on the desk. One was twisted and useless, the other looked crisp and new. "Both of these bottles were put into a medical sterilizer and blasted with live steam," he said. "But this one," he said, pointing to the one that had come through unscathed, "we 'treated' first."

In another room he showed two plates, one holding a section of a waffle, the other an unrecognizable gob of decayed material. "Each of these plates holds part of the same waffle," he explained. "It was baked several months ago, then stored at room temperature. Only this one," he indicated the fresh-



FOOD PRESERVING by radiation is the way to foods that last much longer without refrigeration. The samples above —untreated on the left, treated on the right—were stored for months without refrigeration. REP means radiation unit.

looking one, "was given our 'treatment' too."

The "treatment" he referred to is just about the most exciting new process in industry. Not only can it toughen plastic and preserve waffles, it can also refine oil, vulcanize tires, ripen tomatoes, and perform thousands of other useful tricks.

This modern alchemy is performed by a machine called an electron beam generator. It is an atomic-age "cannon" that bombards anything in range with millions of atomic "bullets." These bullets—actually electrons—are real midgets (it takes 31,150,000,000,000,000,000,000,000,000,000 of them to weigh one ounce!), but they pack a powerful wallop. Traveling at almost the speed of light, they smash into tennis shoes, motor oil, diamonds, or anything else in the target area with enough force to batter the molecules around and rearrange them into slightly different patterns. With its molecules shaken up, the bombarded material is likely to have a new, and sometimes valuable, set of characteristics it didn't have before.

Only a few products made by this process are on the market now. But the list is growing. Research workers shove materials of every kind under the beam to see what will happen. Sometimes they get startling results such as 130 octane gasoline from crude oil. You can't get a tankful yet; it's too expensive and your engine couldn't take it. But the potential is obvious.

In Wichita Falls, Texas, where the water is as hard as nails and just about as palatable, several dozen families are getting pure, sweet water from compact new machines. The purifying is done by an irradiated plastic membrane developed by the American Machine and Foundry Corporation of New York. The membrane is able to remove minerals, including salt, from water. Soon you will be able to buy a unit for your beach house and get fresh water from the sea; this process is being tested in several water-poor Middle East countries. The Japanese, who have plenty of water but no salt, are using the machine to concentrate salt water. They run the brine into evaporation tanks to get the salt.

CRANBERRIES undergoing conveyor-belt processing by Quartermaster Corps.

The electron beam generator is making a name for itself in the drug business, too. Penicillin and other drugs which can be damaged by heat are easily and safely sterilized by this radiation. The Merck Company packs its antibiotics in radiation-sterilized plastic bags. At the Ethicon Company, a division of Johnson and Johnson, the electron beam sterilizes up to $100,000 worth of surgical sutures and other important medical products every day.

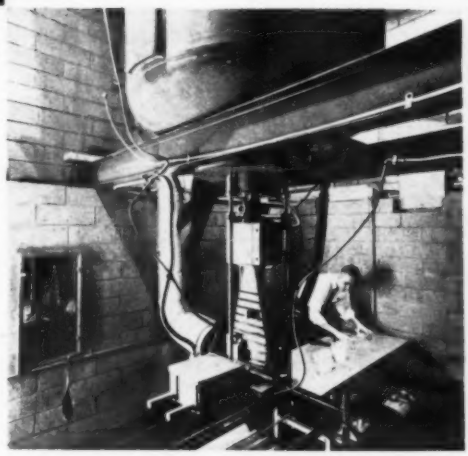
In a few years you may buy radiation-vulcanized tires that give much greater mileage. Ultimately these tires may be cheaper, too, because the electron beam will allow tire makers to set up fast, automatic production lines, impossible with present techniques.

But even before you get your first irradiated tire, the rubber band makers will probably begin using the electron beam to vulcanize their ever-useful products. A maker of rubber-soled tennis shoes in the midwest is also considering getting away from the vulcanization oven that has plagued the rubber industry for so many years.

Irradiated insulation on hook-up wire is already being used in everything from television sets to Pioneer V's intricate communications system. The insulation on the wire is tough; it holds up reliably under extreme conditions of heat and vibration in missiles and other military equipment.

General Electric is marketing an irradiated plastic tape called Irrathene, which has similar characteristics and is used in tough insulating jobs.

Scores of useful effects can be achieved by bombarding plastics with electrons. Ever put left-over food in the icebox in a polyethylene container, only to have it take on that "plastic" taste and odor? Bom- [*Continued on page* 166]



PLASTIC items about to be irradiated at GE. Big pipe carries off ozone produced by beam.

LIVE STEAM in a sterilizer ruins plastics—unless they have been toughened by irradiation.

SPECIAL SERVICE SECTION

WHAT YOU SHOULD KNOW

ABOUT RUGS AND CARPETS

By Al Bernsohn

Do you know the difference between a rug and a carpet? Just what is broadloom? How to remove spots and stains? What is tufting, weaving? The most common method of installing wall-to-wall carpeting?

THE biggest single item of expense in furnishing a home is something you put on the floor and walk all over—rugs and carpets. You will find rugs or carpeting in some part of every home except the kitchen. Rugs and carpet prices vary from as little as $5 a square yard to as much as $50 a yard.

First of all, what is a rug? It's a room-size or smaller-than-room-size-floor covering which is "free standing." That is, it's not nailed down, cut, or "installed." It may be as small as 2x3 feet or as large as 15x30 feet. Carpeting refers to a floor covering which has been specifically cut to fit a particular area.

You can usually save a little if you decide on a *rug* instead of a *carpet*. Just buy a rug and a pad, roll them in place yourself, put the furniture back and you by-pass about $1.25 a square yard in installation cost. Get a rug to fit within six to eight inches of the wall of smaller rooms and within a foot of the wall of large ones. With a rug, you pay for no waste material, save on yardage and you can turn it around to distribute wear more evenly. Rugs can be sent out for

BIGELOW AXMINSTER LOOM. This carpeting is woven in 9, 12 and 15-foot lengths. In Axminster weaving, the pattern is determined by arrangement of spools of yarn.

THE FIRST STEP in laying a rug or installing wall-to-wall carpeting is to remove all furniture and doors in room.

cleaning and are a particularly sensible type of floor covering for people who move frequently.

Permanently installed carpets are often used in living rooms, bedrooms, hallways and stairs. They carry prestige. And if you burn a hole in one or get a non-removable spot on it, you often can repair it with a nearly invisible patch, something that can be done with few rugs.

Carpets and rugs are both made of the same materials and in the same ways. One type, representing about half of the total soft floor covering output, is called "tufted." Pile is attached by machine-sewing tufts through a previously woven backing fabric, usually jute or heavy cotton canvas.

Knitted carpets, newcomer to the ranks of manufacturing methods, are made on huge knitting machines that combine the pile yarns and backing materials in one operation. These too are becoming increasingly popular.

Most prevalent of the weaves are: *Wiltons*, made on looms using punched cards to regulate colors and types of yarns going into the loom. These have added body because all colors not drawn up as pile are buried beneath the surface. *Axminsters* are often intricately patterned to resemble Oriental rugs. These have heavily ribbed backs and can only be rolled length-wise. *Velvet*, simplest of weaves, is usually used for solid colors and plushy looks. Velvet wears well if closely woven. *Chenille* is

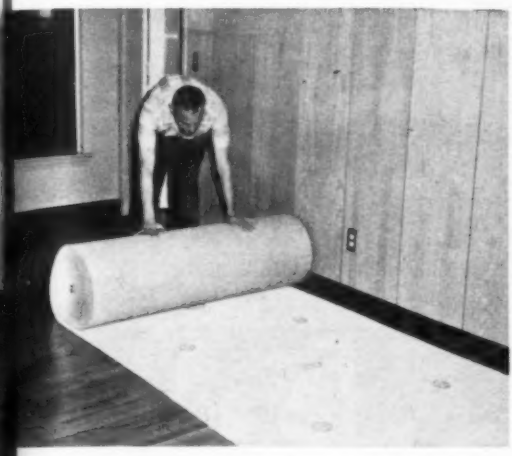
NAIL DOWN all squeaking floor boards. Use spirally cut or cemented-coated nails.

SWEEP FLOOR. These pictures show room-size rug installation, not a wall-to-wall job.

woven on two looms, a blanket of pile surface-woven on one loom is cut into furry strips and woven into the carpet base on another loom. These are often custom woven. *Quality of manufacture and amount and type of fiber going into the pile determine wear and price of carpet more than methods of manufacturing.*

Rug and carpet backing is usually jute, kraftcord (made from woodpulp) or cotton coated with latex to help anchor tufts and seal in loose threads of the cotton or rayon chain yarns used for binding the pile and backing together. Sometimes resin is used for coating. Some carpets even have a back layer of foam rubber to eliminate the need for a pad.

The pile—what goes into it, its processing, density and height—is the big thing in selecting rugs or carpets. What you want in any quality level is the maximum amount of the fiber in each square inch. Rug fibers must be heavier than those of "wear" fabrics, resilient,

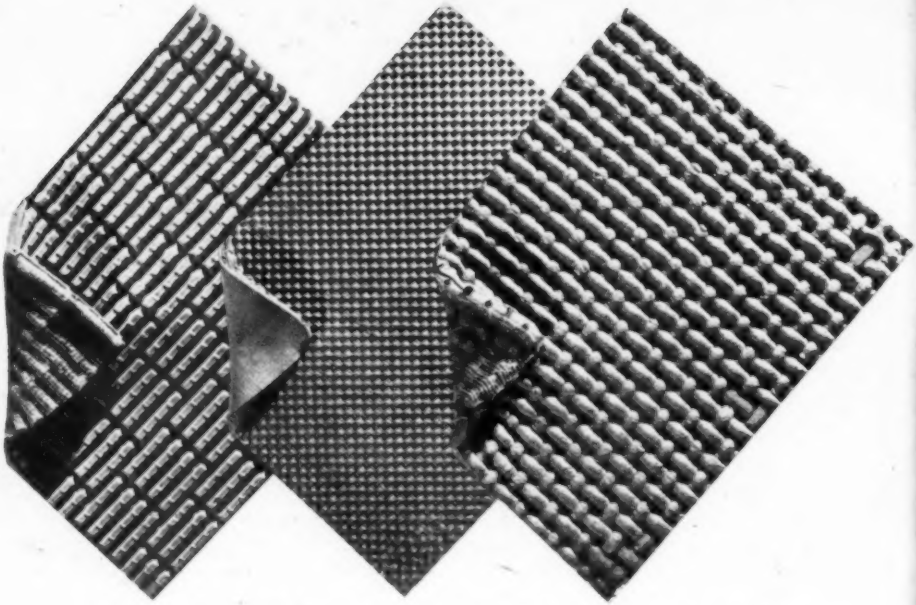


ROLL OUT underlayment. Make sure paper backing is on top, to face bottom of rug.

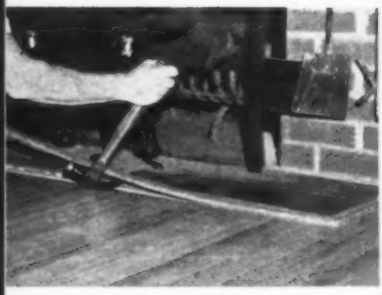
CUT RUBBER underlayment so that it is a half-inch smaller than the rug area.

NEXT STEP IS to seam all the joints with tape specially made for this kind of work.

THE MOMENT of truth, rolling out the rug. Stretch and tug the rug to remove all ripples.



SPONGE RUBBER carpet and rug underlayment made by U. S. Rubber Co.



EXISTING MOLDING around the fireplace is first removed.

INSTALLING carpet-grip molding around hearthstone.

AFTER carpeting is laid, knife cuts away excess.

ALL WALL areas are lined with Smoothedge molding.

AFTER MOLDING is nailed down, underlayment is laid.

BAR BINDER is used when carpet meets linoleum.

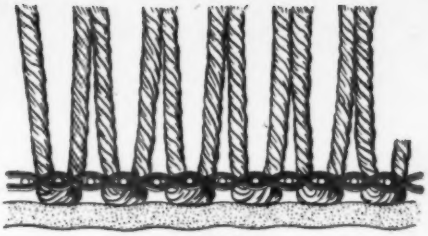
IMPORTANT TOOL is the kicker, used to stretch carpet over "tackless" molding.

LATEX AND TAPE are used by the pro to join carpeting; makes barely visible seam.

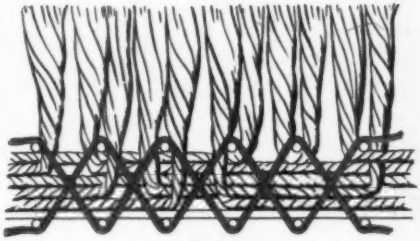
able to withstand abrasion, and resistant to soil.

Wools, grown where climatic conditions are severe in mountainous terrain of the Middle East, South America, New Zealand and Scotland are the prime source for carpet wools. They're tough, lustrous and resilient and now some are permanently moth-proofed. *Cotton* is an economical fiber, serviceable, colorful and able to be machine-laundered, but not as resilient as wool and a poor choice for heavy-wear locations. *Carpet rayon,* several times the thickness of other rayons, is also low in cost but subject to crushing. It wears well, though, if the rug is made compactly. *Nylon,* though costly, is remarkably right for carpeting, especially in the heavy, continuous filament form now prevalent in rug and carpet usage. It looks well, resists wear and soil and has excellent resilience. *Acrylic fibers,* including *Orlon,* are resilient and easy to clean. Frequently

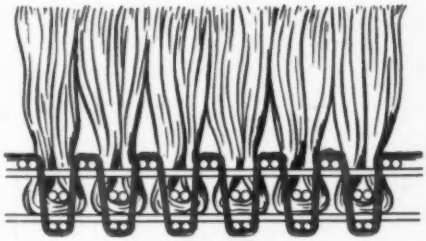
PHOTOS on these two pages show "tackless" wall-to-wall job.



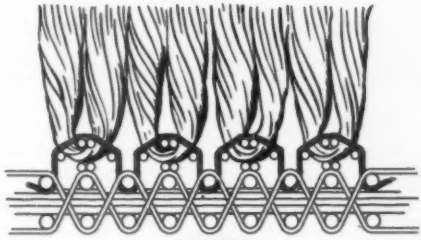
TUFTED



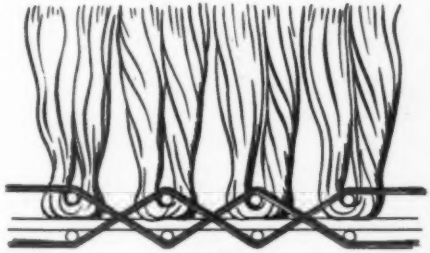
WILTON



AXMINSTER



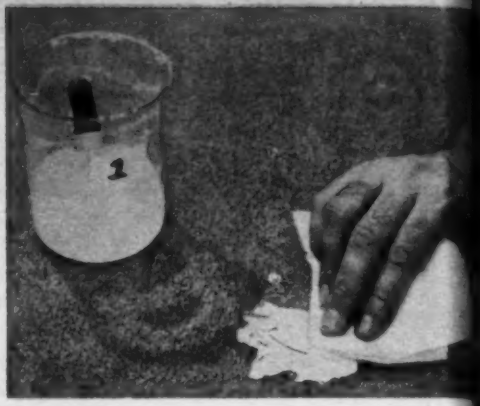
CHENILLE



VELVET

HOW DIFFERENT carpets are woven. Warp shown in color.

STAIN REMOVAL GEAR: detergent, vinegar, Carbona, eyedropper, sponge, cloth.



FORMULA No. 1 consists of a teaspoon of detergent in half-pint of warm water.

AN OIL STAIN will respond to Carbona. Rub lightly with a clean rag.

FOR GLUE STAIN, use Formula No. 1. Start cleaning up as soon as stain is discovered.

LIQUID SHOE POLISH can be removed with Carbona. Keep sopping up with fresh rags.

manufacturers use blends of carpet fibers to gain the good qualities of several or to lower cost.

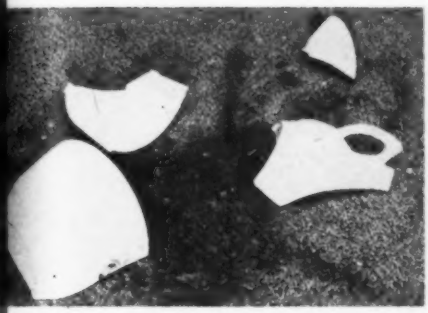
In rating carpets and rugs, price and quality, or durability, match up fairly well. It's unlikely that anything costing less than ten dollars a square yard will last over five years under normal wear. Don't try to economize on carpeting to be installed where wear is heavy, such as in halls and stairs.

In judging prices, check carefully to see if it's for carpeting alone or for carpet, pad and installation; the difference can be between $2.25 and $2.50 per square yard. If you're quoted a price on a square foot basis, multiply it by nine

FOR CHEWING GUM, apply Carbona on and around gum. Let soak, lift with spatula.

FORMULA No. 2, a teaspoon of white vinegar mixed with three teaspoons of water.

A "DRY" cleaning fluid such as Carbona will take care of oil and grease stains.



FOR BEVERAGES, use Formula No. 1, followed by No. 2 if stain persists.

CANDY. Scrape off with dull knife, use Formula No. 1.

LIPSTICK. Use Carbona, then No. 1.

SPONGE UP ice cream and milk stains with clean cloth, then follow with No. 1.

and see how it stacks up against the square yard price. Don't let the dealer use a "guarantee" as an add-on to the purchase price. Shop and compare if a trade-in allowance is involved to see that you are getting a genuine savings.

A pad should always be installed under carpeting or a rug to lessen wear. It also adds comfort, sound-proofing, warmth and resilience. Hair pads coated with rubber are better than jute and hair-and-jute combinations. Sponge rubber pads, at least a quarter-inch thick are in the quality group. A newcomer is polyurethane plastic for padding. Prices for pads range from 75¢ to $3 per square yard. Best bets are those above $2. [*Continued on page* 143]

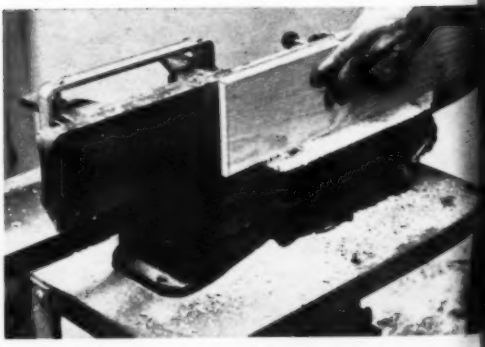
TOY CHEST

Mom, too, will appreciate this rolling storage bin (as soon as her tot learns how to use it).

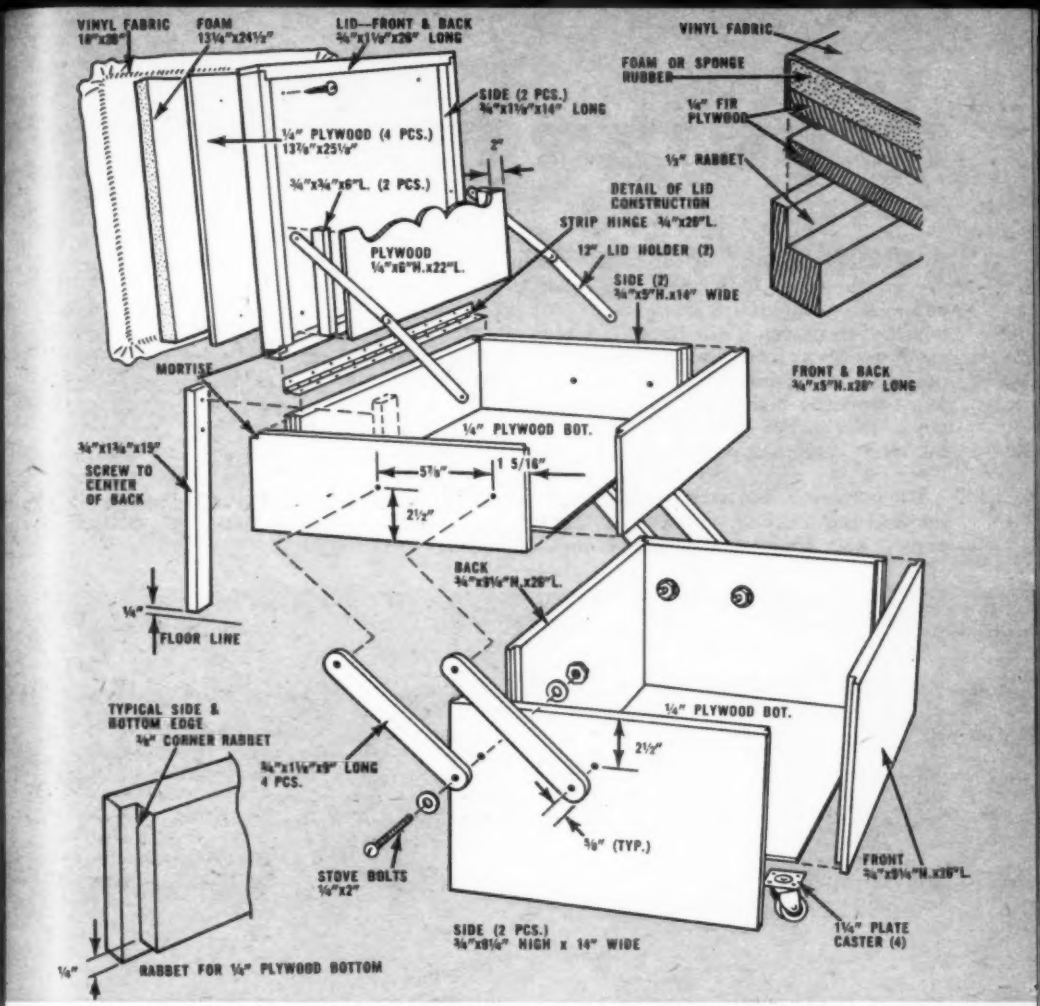
By R. J. Capotosto

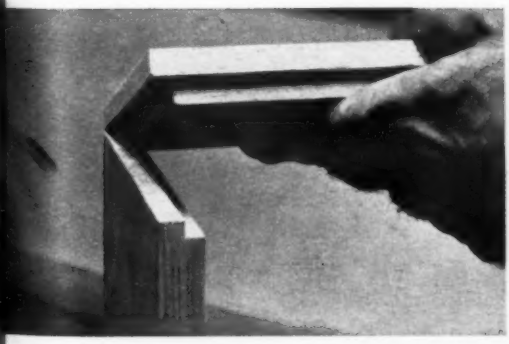
THIS chest is simply an enlarged version of Milady's jewelry box. The lid doubles as a seat and magazine rack. Being mounted on casters, a youngster can push the chest around with ease.

Start by cutting the ¾-inch pine and quarter-inch fir plywood to size as indictated in the drawing at right. Rabbet the joints and assemble the chest with glue and two-inch finishing nails, fastening the plywood bottoms with one-inch brads. Then paint the chest, attach the hardware, jig-saw your kiddy's name from quarter-inch plywood. •

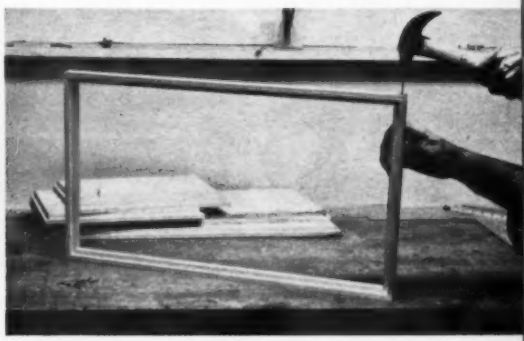


JOINTER rabbets the wood for assembly: circular saw or shaper can also do job.





CHECK THE FIT of all rabbeted joints before gluing and nailing pieces together.



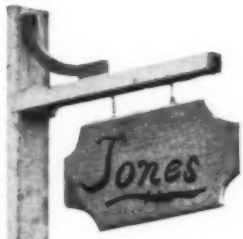
RABBETED PINE LID frame is assembled with glue and countersunk finishing nails.

PLANTER FENCE

EMBODYING the features of a decorative corner fence with an outdoor planter, this personalized landmark includes a name post as a part of its design. The lift-out flower boxes are easily removed from their positions between the posts. The posts and slats of the fence are of redwood and the boxes of exterior-grade fir plywood. The entire project can be built with a hammer, a hand saw and a coping or keyhole saw.

Begin with the flower boxes—two rectangular and one curved. Cut the ¾-inch plywood ends to size, four for the two rectangular boxes

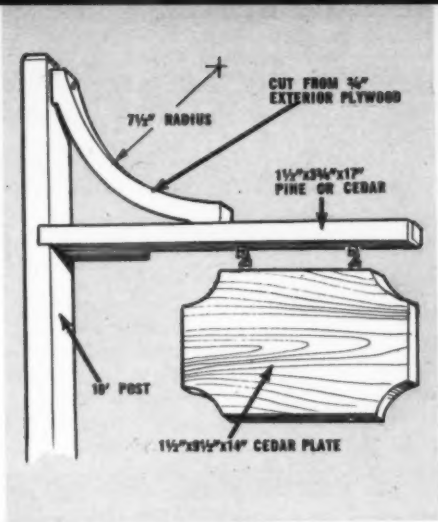
CURVED SIDES of planter are held in place with bar clamps while being nailed to ends and bottom.

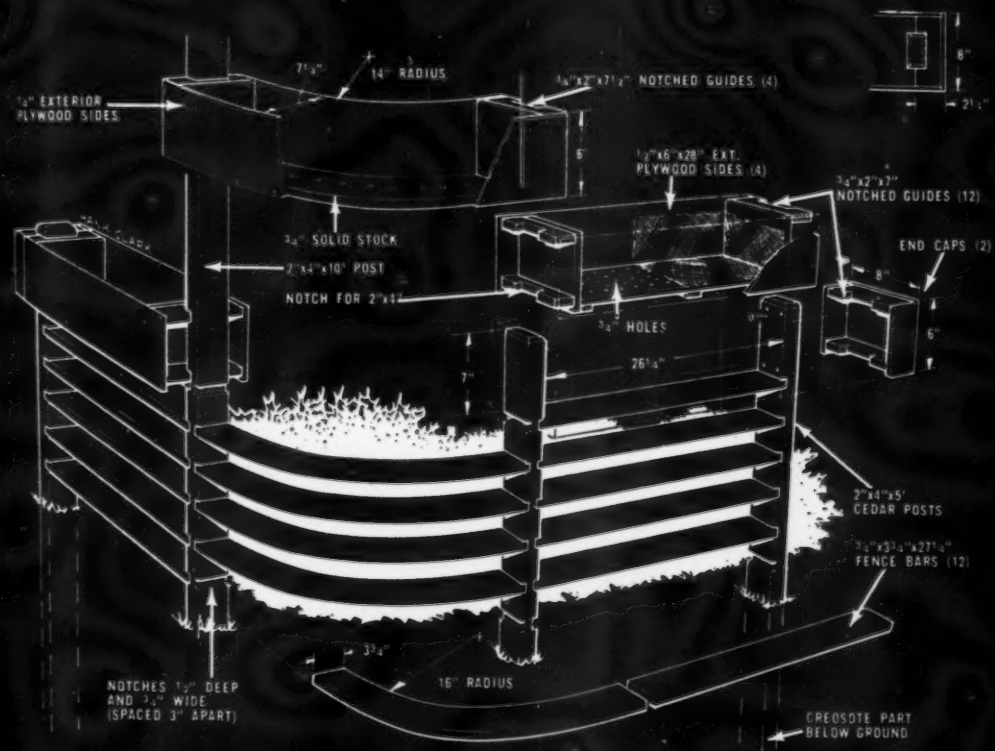


GRACEFUL front yard structure announces your name from a wood plaque —of this, or any other design you prefer—overhanging a bright profusion of potted flowers.

and two for the curved box. Note that the plans show that the sides of the rectangular boxes are of half-inch plywood while those of the curved box are quarter-inch ply; this difference is made up in the ends. So cut four 6x7-inch pieces for the rectangular boxes and two 6x7½-inch pieces for the curved box.

Make the guides for the rectangular boxes two inches wide, and for the curved box 2⅜ inches wide. Attach the top guides flush with the top edge of the ends and the lower guides ¾-inch up from the bottom using two-inch finishing nails. [*Continued on page* 136]



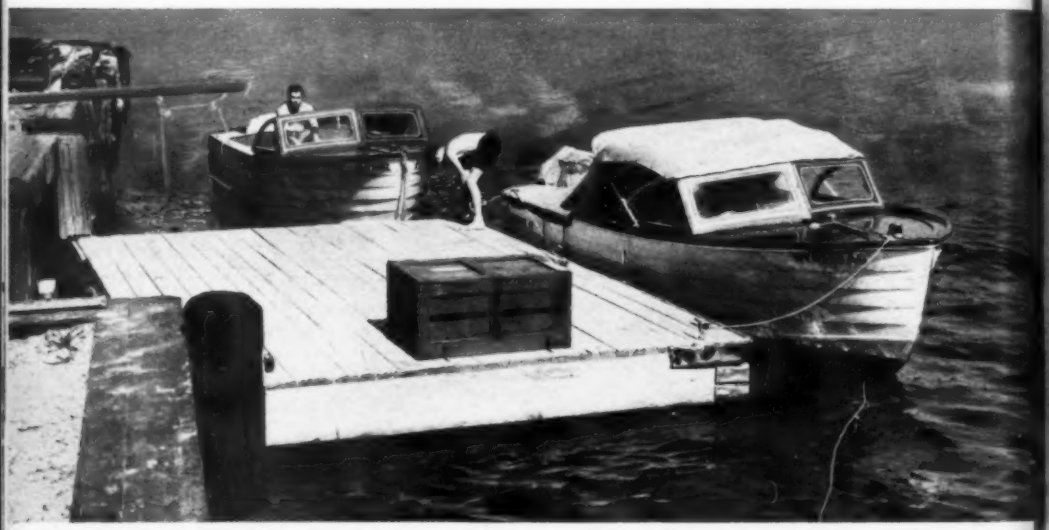


STYROFOAM RAFT

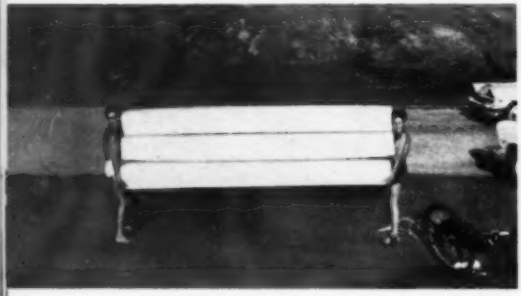
The buoyancy and durability of Styrofoam make ideal flotation for this versatile platform.

STYROFOAM is about the best flotation you could possibly use for a raft. Composed of thousands of tiny plastic air cells, it cannot leak or become waterlogged. It's light, too; one cubic foot weighs about two pounds and has a buoyancy factor of 55 pounds. Furthermore, it is unaffected by the elements and will last indefinitely if it isn't exposed to hacking or abrasion.

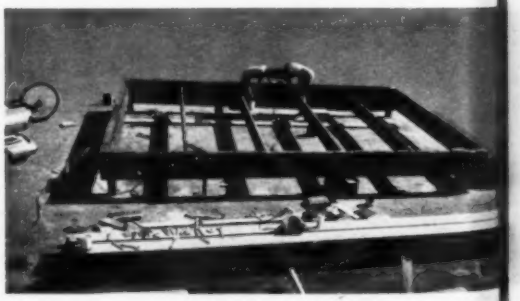
The 10½x18-foot raft shown is quite simple to construct. After treating all



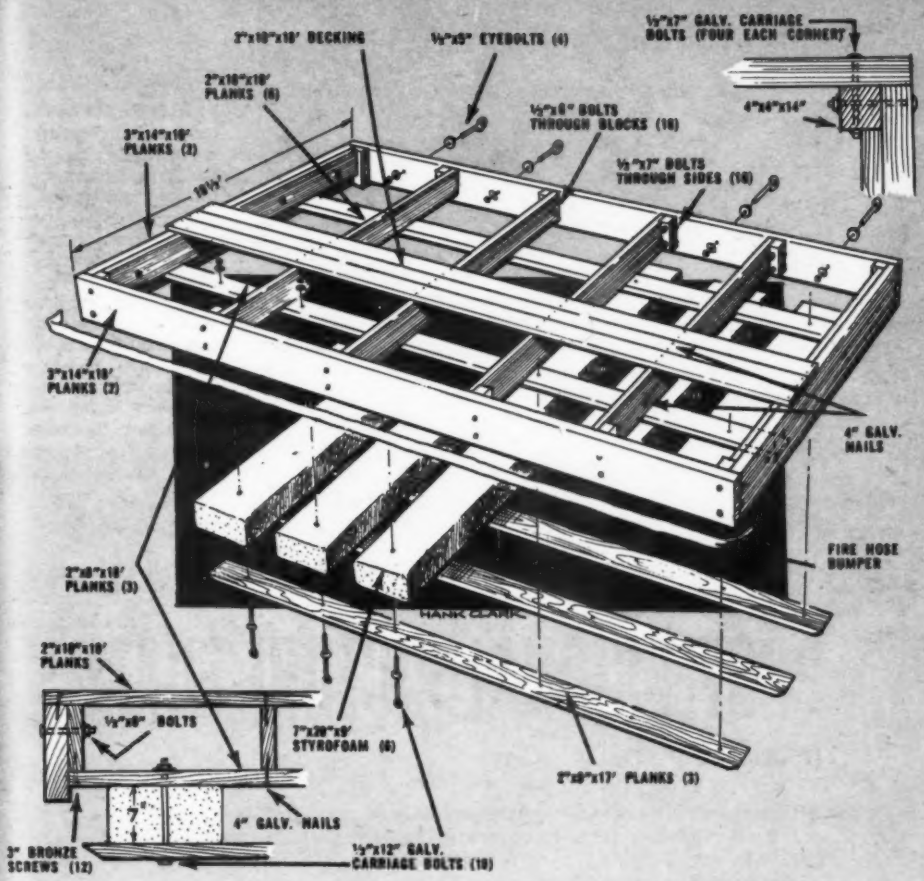
10½x18-FOOT FLOAT can serve as a dock or as a sunning and diving platform—or both.



STYROFOAM IS LIGHT—six sections like these provide the flotation for this raft.



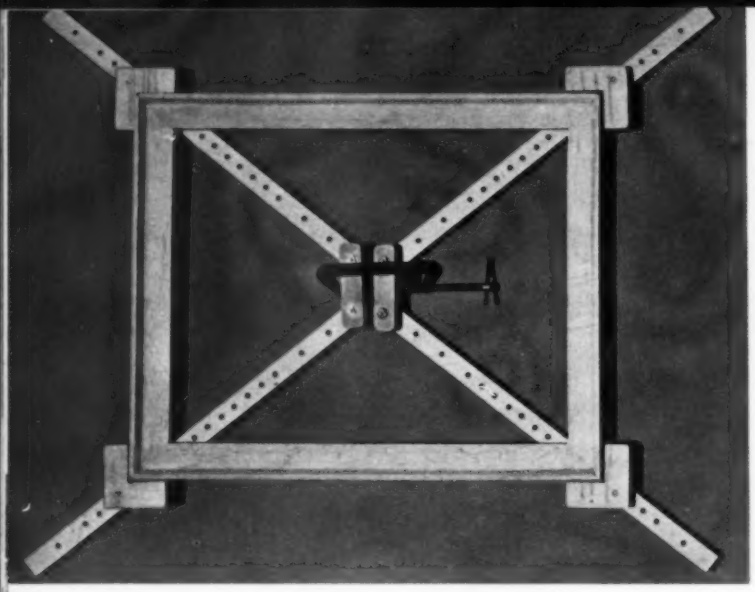
TREAT all lumber with wood preservative before proceeding with assembly of frame.



RAFT CONSTRUCTION DETAILS

the lumber with Cuprinol wood preservative, the frame sides are joined at each corner with four ½x7-inch galvanized carriage bolts passing through 4x4-inch blocks on the inside. The bolting of the inner cleats and planks then proceeds rapidly. To support the Styrofoam, two 18-foot planks are fastened to the undersides of the inner planks with three-inch bronze screws and four-inch galvanized nails. The Styrofoam is then sandwiched between these planks and three others with 12-inch galvanized carriage bolts passing all the way through. The three bottom planks can then serve as runners if the float has to be hauled out of the water in the winter. For the deck, fifteen 2x10-inch planks are fastened down with four-inch galvanized nails. The job is completed by nailing an old fire hose to the sides to provide protection for any boats brought alongside.

Experience has shown that it isn't necessary to coat Styrofoam with antifouling paint; marine growth will take hold, but it is easily removed without damage to the Styrofoam if the raft is hauled out after about four years and the growth is permitted to die in the air. In waters extensively contaminated by gasoline or petroleum fluids, several coats of [*Continued on page* 139]



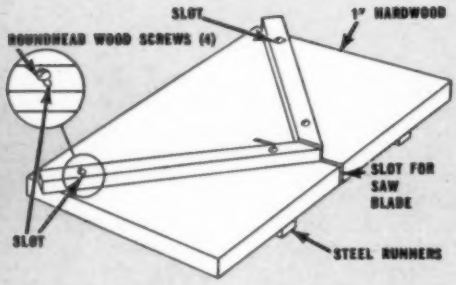
FRAMING JIG needs only one C-clamp in the center to tighten the four right-angle blocks against each of the glued corners of the frame. Fasten each of the pivoting blocks with a bolt through the identical relative hole of each of the 1x1-inch hardwood slats. The two apexes formed by the four slats are connected by bolts with a couple of pieces of short stock.

HOW TO MAKE

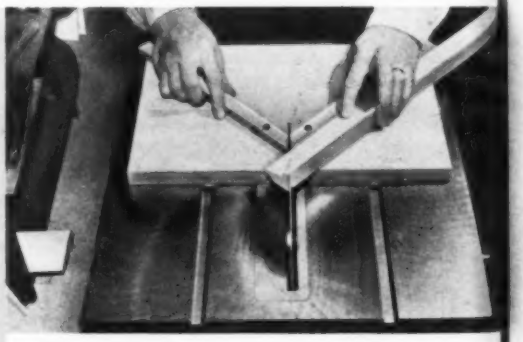
PROFESSIONAL PICTURE FRAMES

By Robert W. Brown

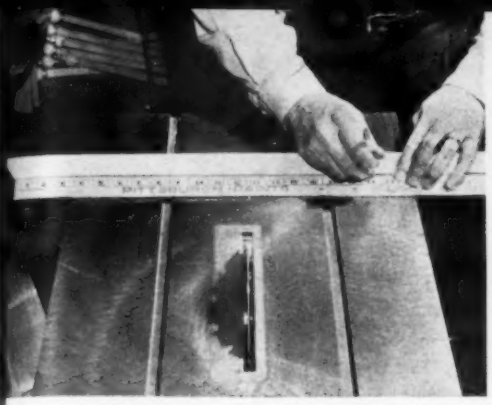
LIKE many an amateur photographer, you probably have tucked away at least a dozen portrait photographs that are seldom viewed. C'mon, fella, get with it! Framing these studies and hanging them out in full view around the house is all the rage these days. You can have a lot of fun making the frames, too. And with the aid of the [*Continued on page* 150]



▸ JIG DETAILS

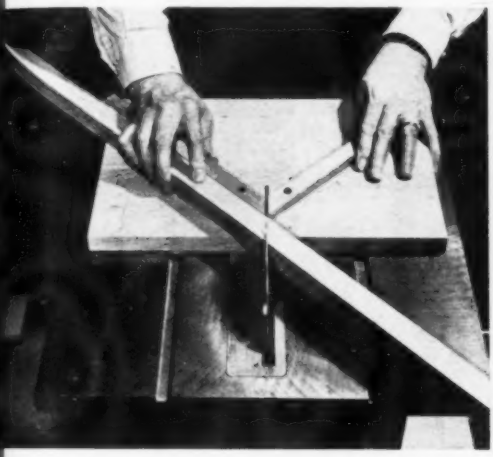


USING THE MITER JIG the first 45° cut is made at one end of the frame molding.

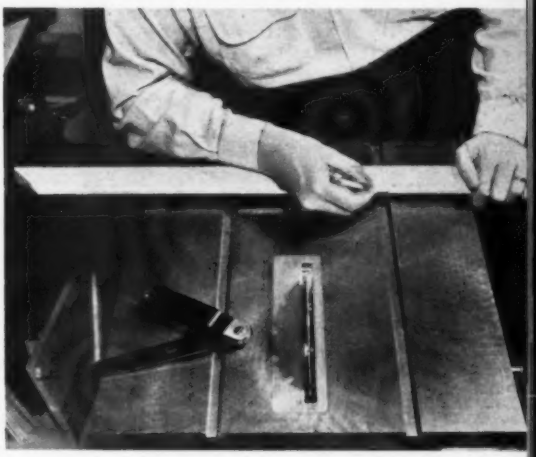


YARDSTICK is used to mark the outside length or width of the frame, then the . . .

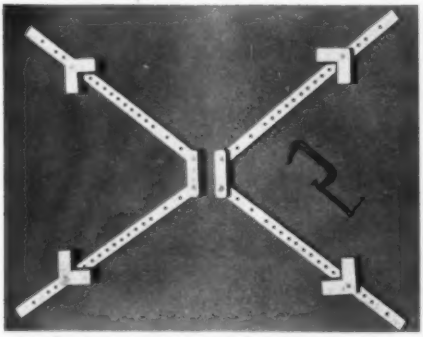
. . . 45° GAGE is fixed on the mark and a line is drawn to the inside of the miter.



SECOND CUT is made—again using the miter jig—on the same length of molding.



MEASURE, MARK AND CUT the remaining sides of the frame as illustrated above.



GEOMETRICALLY PROVEN, this simplified framing jig clamps frame until glue sets.

WAXED PAPER slipped under right-angle wood corners keeps glue from fouling jig.

CAR CARE

CUTAWAY VIEW of a modern carburetor. This one is a Carter two-barrel down-draft unit, Model ABD 2985S, having a low-speed idle system, a high-speed system, a choke, accelerating system, meter rods and a dashpot assembly.

Photograph courtesy of Lincoln Division, Ford Motor Co.

HOW YOUR CARBURETOR WORKS

By Frederick C. Russell
Member, Society of Automotive Engineers

LET'S face it, today's carburetors are more complicated than ever before. There are two- and four-barrel carburetors, twin four-barrel and triple two-barrel jobs. Some of the carbs on the earlier compacts were pretty matter-of-fact but now even they're going fancy. Apparently in a world where performance is king, simplicity must abdicate.

For example, some automatic transmissions now are hooked up to the same throttle linkage that operates the carburetor. Some carbs have a dashpot control—a sort of brake on the throttle that prevents too sudden closing that could stall you out during a sudden stop. The latest types even have a water-heated throttle to prevent icing in cold weather. Others are equipped with secondary throttles that bring extra barrels into action during high-speed runs and help cut down gas consumption.

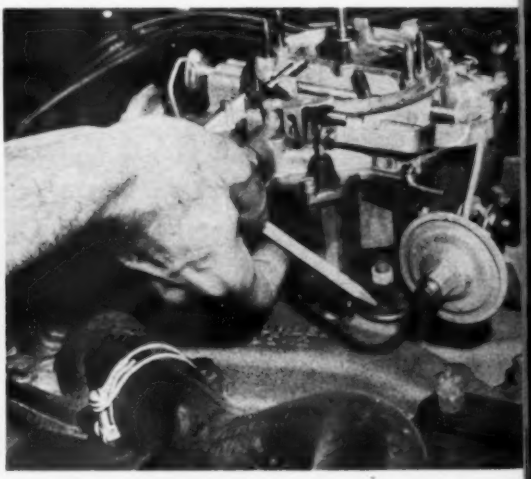
All standard carburetors have systems or "circuits" which provide metered fuel and air to take care of idling, power, acceleration, etc. They all have a choke control, a fast-idle device, an accelerator pump and usually an unloader. In addition others have anti-stall controls including the new idle compensator which prevents the engine from conking out during prolonged hot

idling—a starting switch where cranking is actuated by pressing the accelerator pedal—a replaceable leaner or richer metering rods—a vacuum switch or secondary throttle lever.

But before going any deeper into the intricacies of carburetors, let's review a few of the hard and fast rules that should be followed to obtain maximum performance from these "hearts" of engines, regardless of their design.

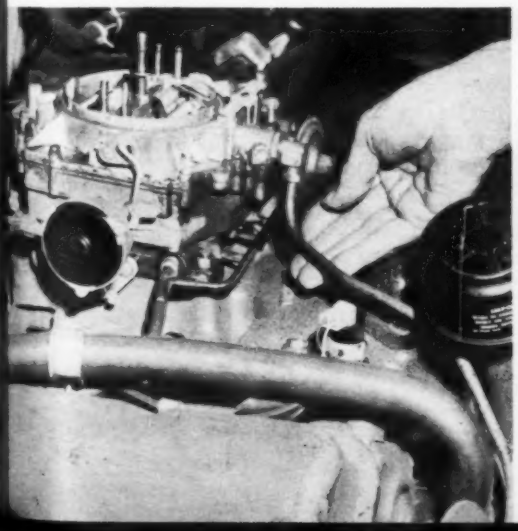
First is the importance of cleanliness. An occasional treatment of carburetor cleaner will keep this vital unit operating more efficiently and will put new life in a carb that has been neglected. While the engine is running, feed this solvent (Gumout) to the carburetor. Or else disconnect and block off the gas line to the carburetor and allow the

NEVER USE OIL to lubricate manifold heat control valve as shown here; use graphite.

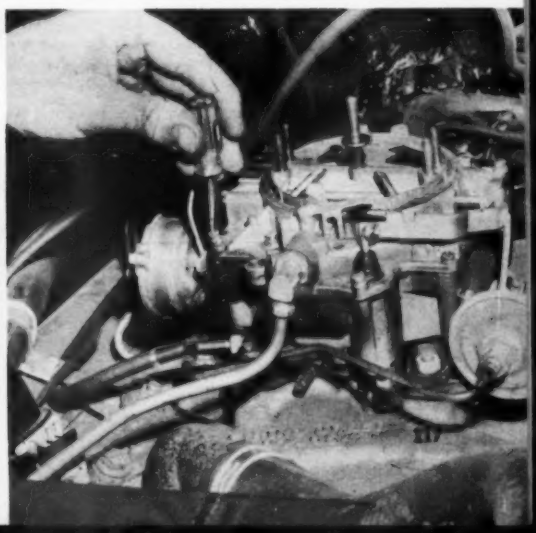


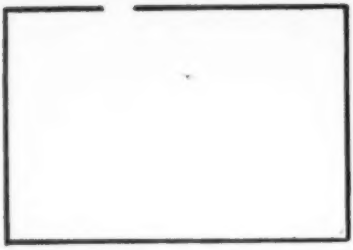
A WORN GASKET between carburetor and intake manifold will leak gas; replace it.

LEAKY FUEL LINES cost you money. Make sure their connections are tight and dry.

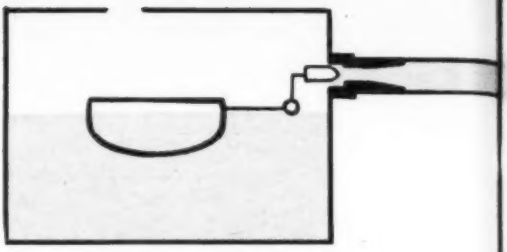


KEEP CARBURETOR cover screws tightened to prevent development of gas or air leaks.

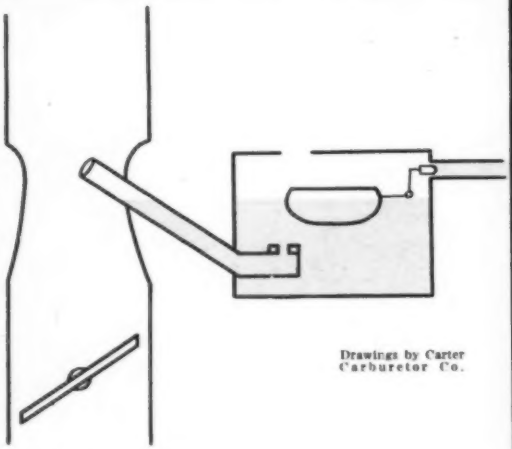




First we need a place for our supply of gas. It is called the "bowl."

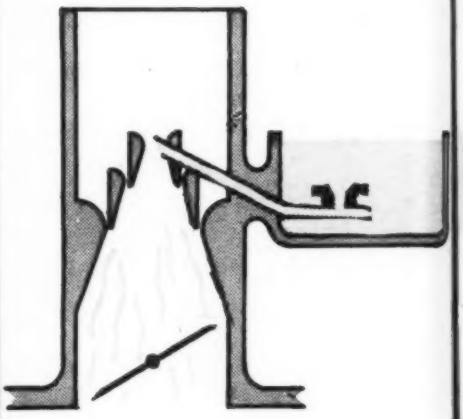


A float actuates a needle valve to control the level of gas in the bowl.



Drawings by Carter Carburetor Co.

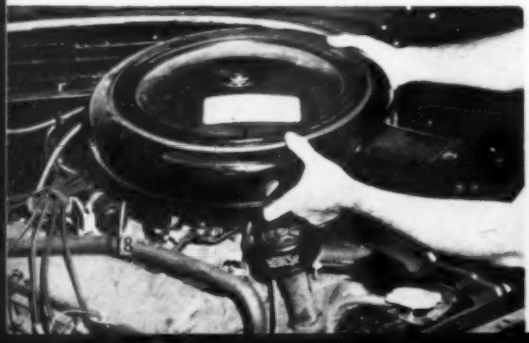
We bring air and gas together and add a restriction (the pipe) to passage of gas.



Now we have an elementary carburetor with flow of gas proportional of volume of air.

cleaning fluid to pass into the unit by gravity from a container piped to the carburetor's fuel inlet. Apply some solvent to the fast-idle cam mechanism to help maintain the efficiency of this control. Remember, too, that an automatic transmission will shift better if its throttle control is kept free of dirt.

WHEN REPLACING the air cleaner on carburetor, be sure that it is properly seated.



MARK best choke setting on choke cover to guide future adjustments of this unit.

The second point to consider is carburetor wear. The needle valve and its seat may need replacing. There is wear, too, on the metering rods, the idle adjusting screws and the float mechanism. For the benefit of home mechanics who may not be aware of it, carburetor manufacturers make kits which can be used to give new life to the oldest of units.

Point number three is the importance of checking other units on which the carburetor itself is dependent. Maybe fuel pump pressure is too high or too low. The fuel filter may not be keeping water and foreign matter from the carburetor, thus preventing the latter's needle valve from seating tightly. Air being drawn in via a leak in the short flexible line between the main line and the fuel pump may cause a condition similar to vapor lock.

Point four covers the business of adjusting the carburetor. Float level that is too high enriches the mixture too much; too low a level leans it excessively. Don't fall into the too-common habit of thinking that the adjustment for the idling mixture applies only to engine operation at minimum speed and at part throttle—this actually is the *basic* mixture. Also important is the idle-speed adjustment. This has become so critical since the advent of automatic transmissions that you really need a tachometer to adjust for the precise rpm.

A quick way to familiarize yourself with current carburetion is to examine one of the simpler units such as the Holley carburetor on the Falcon. This is a one-barrel [*Continued on page* 138]

LOOSE, BROKEN, frayed or leaking vacuum hose lines should be replaced immediately.

SERVICE TIPS

from Detroit

Ford states that most unpleasant noises from a car radio are caused by electrical interference from other equipment in the car. So always check for possible external sources of electrical disturbances before removing the radio for testing or repair.

Dodge emphasizes these points regarding replacement of torsion bars:

(1) Remove all dirt, scale, moisture from inside torsion bar rear anchor.

(2) Coat inside of anchor with multipurpose grease.

(3) Always install a new torsion bar rear anchor seal as specified for each model.

After repairs requiring engine cover removal on American Motors cars, check the fuel pump-to-carburetor fuel line and the carburetor-to-distributor vacuum line advance mechanism for proper clearance to the accelerator linkage. Occasionally these lines are bent when the engine cover is removed and cause the accelerator linkage to stick at near wide-open throttle.

Attention Plymouth, DeSoto and Valiant owners: If erratic "kickdown" persists following transmission throttle linkage and accelerator pedal adjustment, it may be that the transmission throttle rod or adjusting link is deflecting under load. If so, install a new more rigid rod and link.

If you own either a 1958 Packard Hawk, Model LK9 or a 1958 Studebaker Hawk, Model HK7 which is equipped with a generator-driven power steering pump, you are cautioned not to idle your engine at speeds exceeding 1500 rpm for any period longer than two minutes.

A new Idler Arm Ball Bearing Replacement Kit, Part No. 1857962, is now available for 1957 through 1960 Chryslers and Imperials. Complete installation instructions come with every kit.

SIX five-foot strands of rubber power the model. Nose block is pulled out for winding.

BIRD DOG

Rubber-band power and modular framing make this an inexpensive and easy-to-build model.

By Albert E. Christen

THE original L-19 saw extensive service in Korea as a "bird dog" for the army. It was a familiar sight to troops along the front, spotting enemy activity, directing artillery fire and acting as the airborne eyes of the infantry. Our baby Bird Dog was designed from factory-supplied information and, with thanks to the Cessna Aircraft Company, it makes a neat, inexpensive and easy-to-build flying model.

The model features a removable wing for ease of transportation, a modular fuselage (ideal for fast, simple construction) and

rubber band power. Just by winding it up, a boy can send the little ship into the air time and again for smooth, realistic flights.

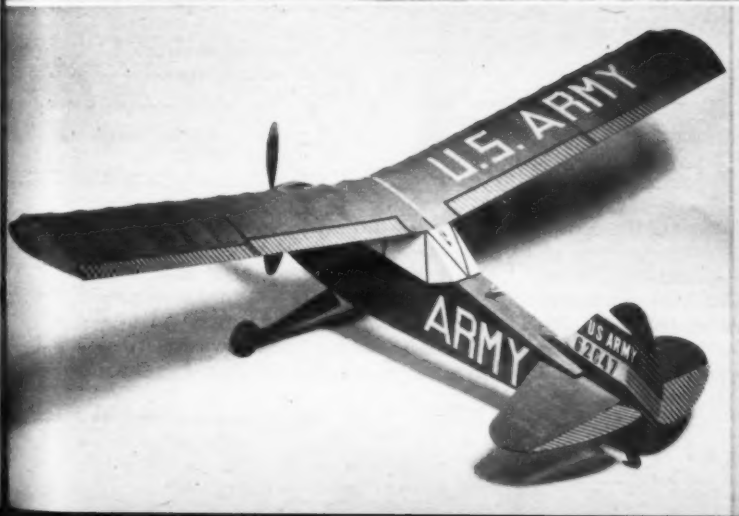
The fuselage is built first. Edge-glue $\frac{1}{16}$x3-inch balsa sheets and then trim them to the outlines of the sides. Next make the fuselage modules as directed on the plan. You'll need six of F1, two of F2 and one of F3. Follow this by cutting out the upper and lower fuselage formers (two of each) and cementing them to the *inside* surfaces of the fuselage sides. Then cement the modules (F1, F2 and F3) to the sides in the proper locations and cement the sides together at the rear. Next cement $\frac{1}{16}$-inch sheet to the top and bottom of the fuselage, except in the area directly under the wing. This will allow the wing to sit in a natural position when held down by rubber bands. One $\frac{3}{16}$-inch dowel is cemented from front to rear along the tops of F1 and F2 as a wing hold-down, two are installed as shown to hold the nose block and one goes at the rear of the fuselage to serve as an attaching point for the rubber band.

Use $\frac{1}{16}$-inch piano wire to form the landing gear and cement the wires in place as indicated. Cement fairings to main landing gear and add wheels.

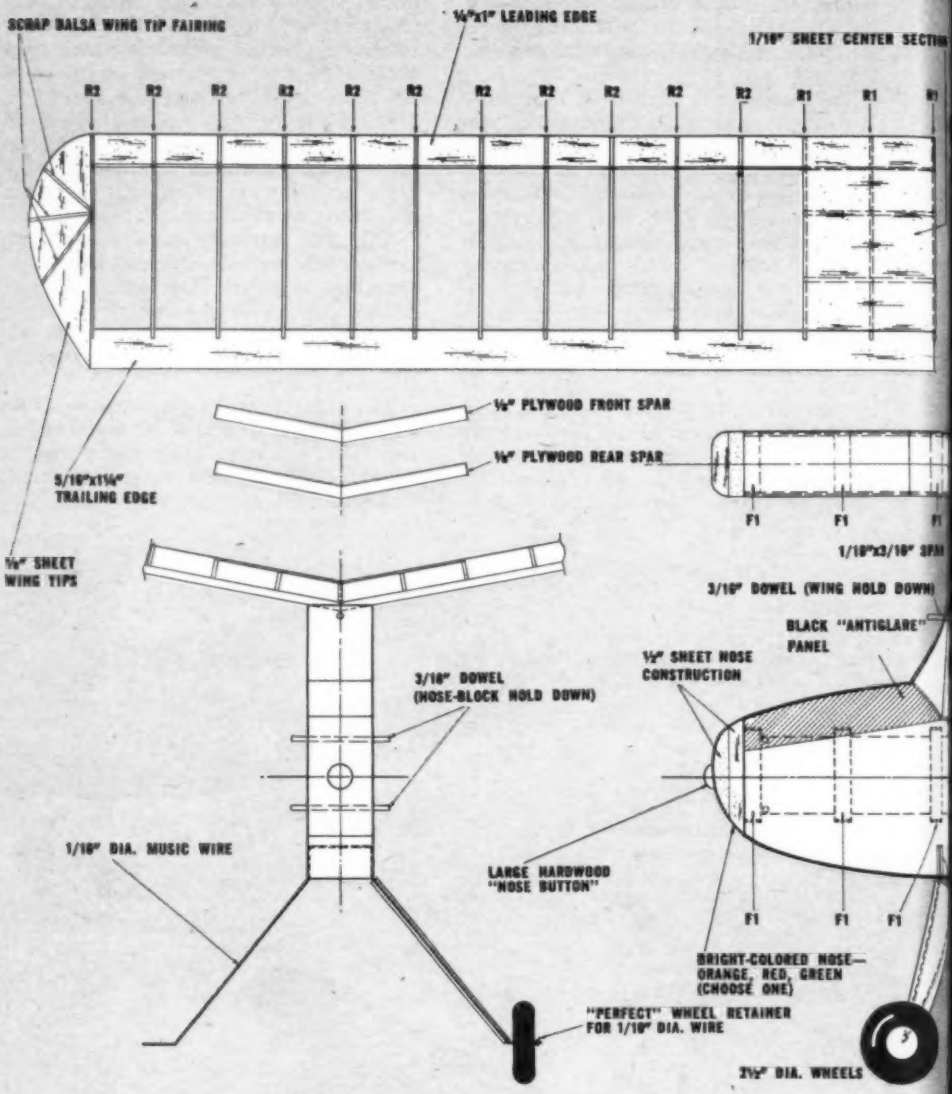
The tail surfaces are made next. Cover each one with Silkspan before assembling it to the fuselage. The stabilizer goes on first, then the rudder. Sheet aluminum hinges allow the adjustments necessary for a properly trimmed model.

The wing is constructed with just two sizes of ribs. Make 22 of R2 and 5 of R1. Omit the center rib (R1) until the spars are assembled and the wings are joined. Then add R1 and apply $\frac{1}{16}$-inch sheet

THE REAL PLANE saw extensive service in Korea, doing observation and liaison work for the army.



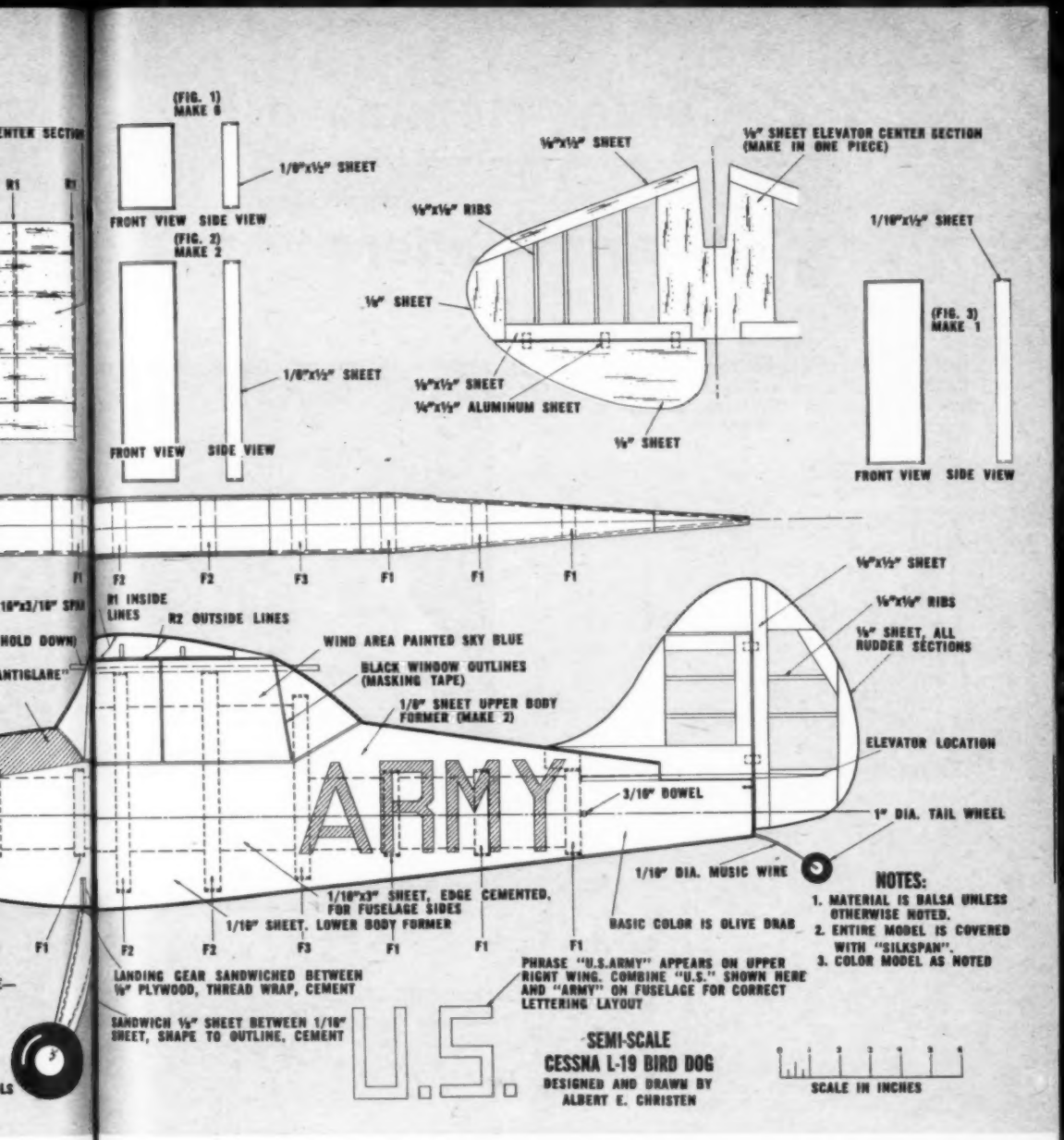
MODEL has greater wing dihedral. Note attachment of wing: hooking rubber band over the projecting dowel holds it down.



balsa to the top and bottom of the center section as shown.

Now make the nose block, using three pieces of half-inch balsa. Note that only two blocks are visible on the plan; the third is a rectangular plug which fits into a cutout in the center of F1 and keeps the nose block aligned. A large hardwood nose button is pressed into the front to complete the unit.

The propeller is a 12-inch diameter ready-made job and is installed ahead of a ball-bearing thrust washer. Put a drop of oil on the bearing for smooth

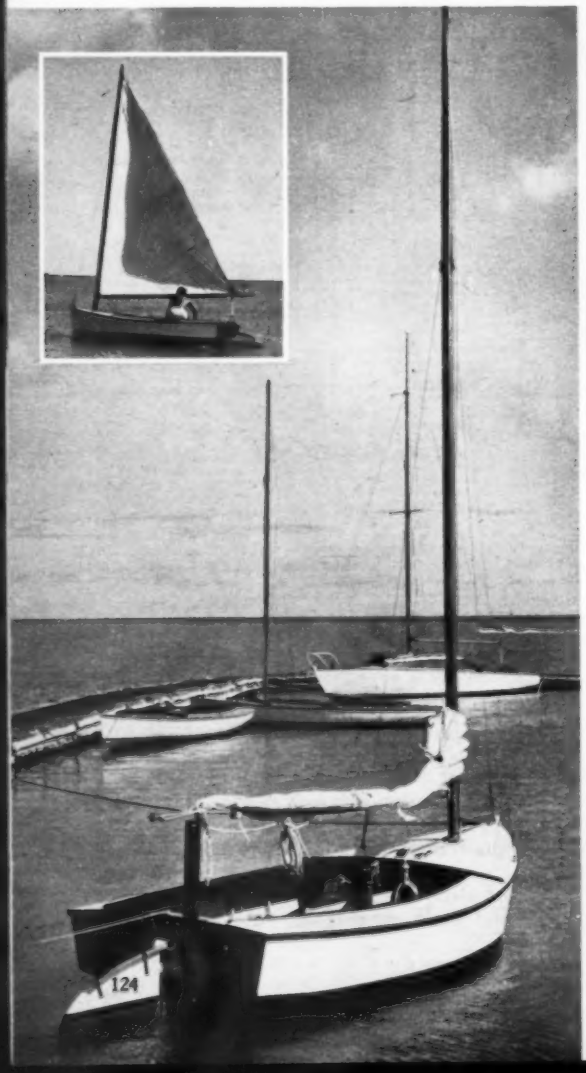


operation. When bending the propeller shaft, put a loop at the front to allow the use of a mechanical winder.

For flying, the model should balance approximately one-third back of the wing leading edge. Depending upon your finish and the wheels used, add weight to the inside of the nose until the proper balance is achieved. Thirty feet of ⅛-inch flat rubber, folded into six five-foot strands, is used for power. Test glide the plane over grass and trim it for smooth flights by adjusting the elevator and rudder controls. •

Golden Hammer Award Winners

CATBOAT below was built by Army Captain W. C. Kaluf for family use in Hawaii. He also made the sail, finishing the 12½-footer in less than five months of spare time. Sorry, we don't have plans.



VIOLIN AND ELECTRIC GUITAR were produced with a pocket knife by A/3C Henry H. Hudson during a Korean tour of duty. The guitar plans were in MI.

AIRPLANE built with hand tools by James E. Tyndall, Richmond, Va., is all wood except for struts, landing gear, cowling and the engine mount.

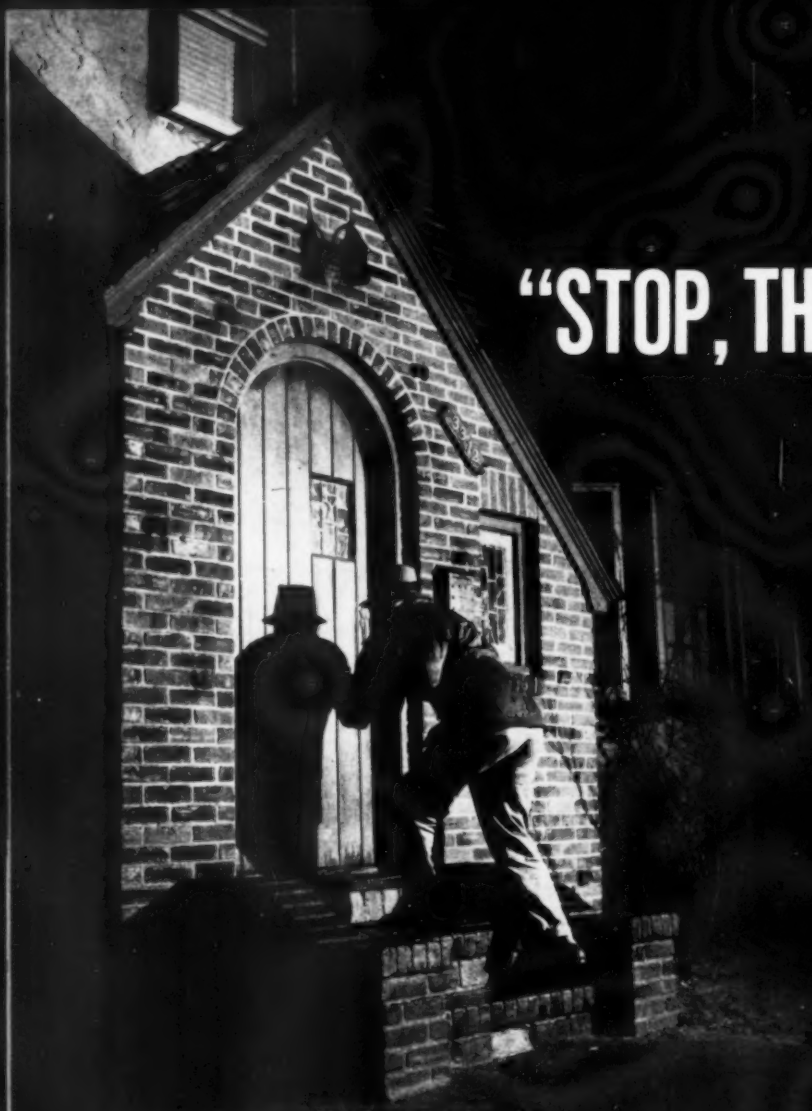
MUSIC LIBRARY shelves and cabinets were built around piano to hold sheet music, recordings and reference works collected by Norman Gallant, who is manager of radio station WFAU in Augusta, Me.

HUTCH helps solve storage problem in summer cabin of R. L. Brandt, St. Paul, Minn. It was finished in knotty pine to match the cabin interior.

BABY ACE cruises at 90 mph with 65-hp Continental engine, lands at 35 to 40 mph. Harold Passow, member of Experimental Aircraft Association in Milwaukee, built her.

CABIN CRUISER with 60-hp engine sleeps four, has galley, head and 25-gal. water tank. John J. Martin, Lindenhurst, L. I., N. Y., built 21-footer for about $2,500.

Each craftsman whose project is shown receives a 24-karat gold-plated Hammer and a Workbench Award Certificate. Runners-up will be sent a beautiful gold-plated Golden Hammer Tie Bar or MI's Certificate of Merit. So send us some *black-and-white photos, with negatives,* and a full description of your latest project. Photos of your workshop are also eligible. Send all entries, with return postage, to MECHANIX ILLUSTRATED Golden Hammer Awards, 67 West 44th St., New York 36, N. Y. Entrants are advised that MECHANIX ILLUSTRATED cannot accept responsibility for customs charges, duties, taxes, etc., levied against Golden Hammer and Golden Hammer Tie Bar winners outside the United States.



"STOP, THIEF!"

By Len Buckwalter

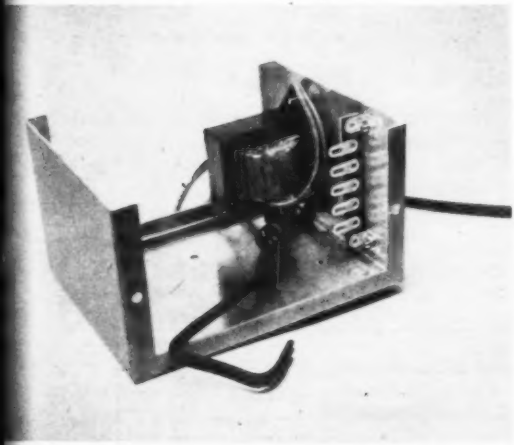
A thief can't get started with this alarm; it sounds off as soon as he touches the door knob!

MOST burglar alarms are patient; they wait until a switch is tripped or a wire broken before sounding off. Not this one. It hates body capacitance—an invisible electronic quantity every thief obligingly carries—and a touch of a fingertip at its sensitive pickup is enough to bring forth a loud, insistent ringing.

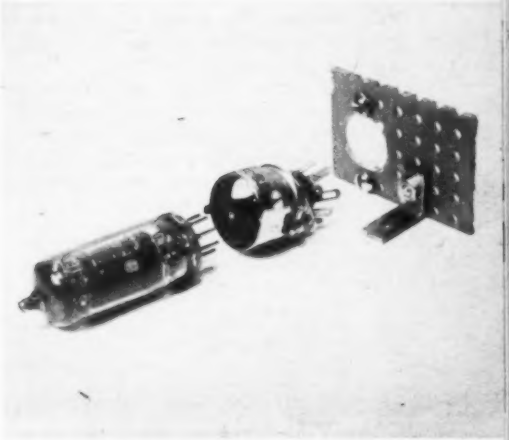
This "hands off" warning can be used to protect doors or

BELL is mounted on front panel. Sensing wire goes to the door knob or metal plate.

MAJOR PARTS prior to assembly. The factory-wound coil is seen at bottom center.

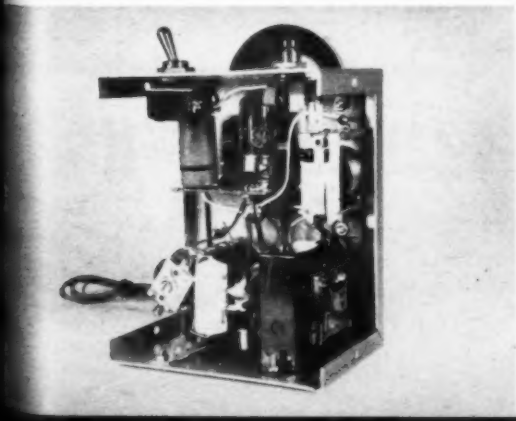


TO START, knot AC line inside; then terminal strip and transformer go on bottom.

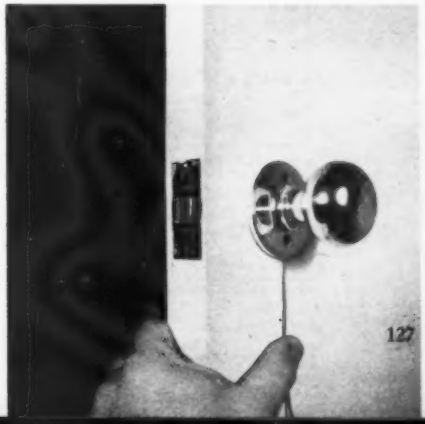


HOLE in Masonite board takes seven-pin miniature tube socket. Note the L bracket.

COMPLETED unit, uncovered to show part location, is ready for hook-up and tuning.



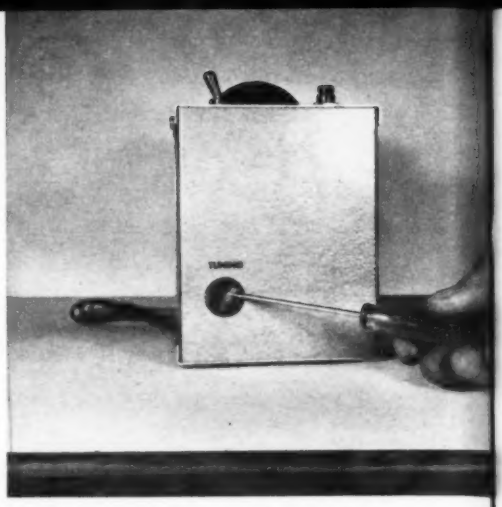
SENSING WIRE leads from a point close to hinge and is held by a door knob screw.



windows. A door knob connection is shown in the photographs but the sensing wire can be fastened to a variety of metal objects. A piece of aluminum screening sunk into a wooden window frame will serve as a pickup if a small mass of metal is not available.

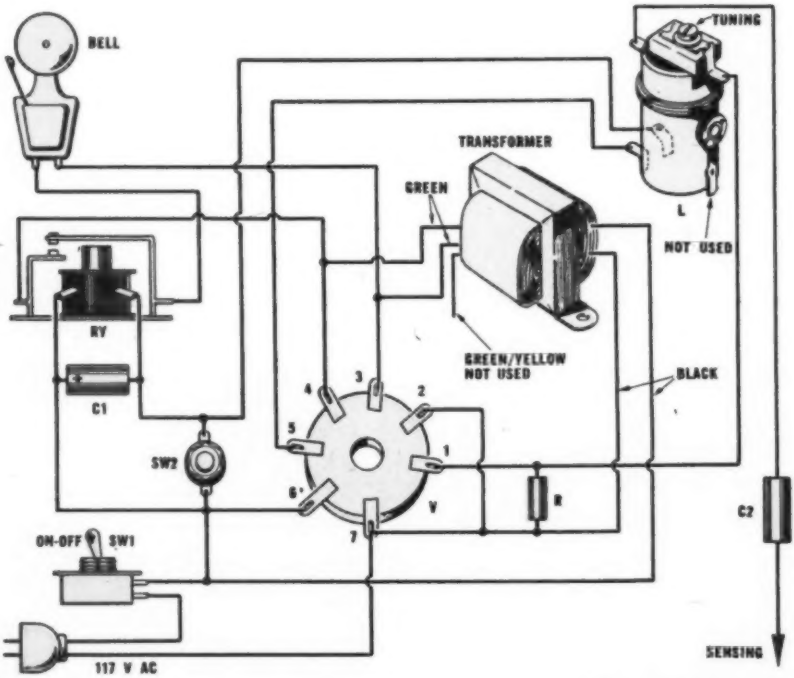
The heart of the alarm is a vacuum tube oscillator which costs only pennies per month to operate. If the circuit remains undisturbed, little current flows through a relay and the bell won't ring. But let a body add its capacitance and the relay current rises and the bell rings.

Except for the bell, which is a hardware store item, the parts needed for the unit are available from radio mail order houses. The model shown was assembled from components listed in two catalogs: Allied Radio, 100 N. Western Ave., Chicago 80, Ill., and Lafayette Radio, 165-08 Liberty Ave., Jamaica 33, N. Y. In ordering parts, note that coil L is an Allied item while the relay is listed only in Lafayette's catalog. Either source will serve for the rest of the components listed at the end of the text.

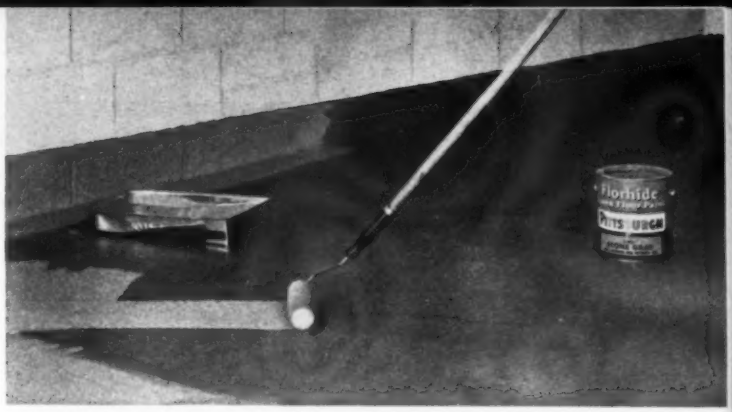


TUNING capacitor is turned through rear hole. On-Off and Reset switches are on top.

Construction can be accomplished with a screw driver, diagonal cutters, a soldering iron and a drill. A round file is also helpful [*Continued on page* 152]



FRESH PAINT TIPS



NEW SYNTHETIC latex paint for indoor and outdoor concrete floors has been introduced by Pittsburgh Plate Glass Co., Florhide dries in an hour; requires no acid-etching of floor.

A BOOKLET, How To Stop Rust, is available by writing to Du Pont, AP-62, Wilmington 98, Del. . . . A clear interior wood finish called, Rez, dries in 20 minutes. Second coat can be applied in two hours. Rez Wood-Tones, Inc., Springdale, Pa. . . . Spatter Dots, an aerosol paint for decorating floors is made by Mer Mar Co., Chicago, Ill. . . . Preservative for wood fences, Oz, prevents rot and swelling. Made by Osmose Wood Preserving Co., 980 Ellicott St., Buffalo 9, N. Y. . . . A white porcelain touch-up paint in a one-ounce bottle with brush is sold for 35 cents by Magic Iron Cement Co., 5403 Bower Ave., Cleveland 27, O. . . . Release-Cote is a cream used to keep paint away from metal and glass when painting. Potdevin Co., 285 North St., Teterboro, N. J.

A LITTLE BLACK PAINT added to white will make it cover better. Add a bit of blue paint in order to make a "whiter" white.

STENCILING SET, consisting of interlocking brass letters complete with brush and paint, is made by Bow Enterprises, Cages Bend Road, Gallatin, Tenn.

PAINT BRUSHES used for oil paints can be cleaned with water if first dipped in Dunk.

New Ideas in Photography

Lens "squints" for beach or snow scenes . . .

opens up a bit in average sunshine . . .

opens wide in shade for clear pictures

Brownie Starmatic Camera

Picture it now—
See it again and again

Automatic Camera is Amazingly Accurate

This automatic electric-eye camera is not only easier to operate than a separate light meter and camera—it's also more *accurate*.

The reason? In each Brownie Starmatic Camera, the built-in meter and shutter are custom-matched to each other by a final factory adjustment. Thus, any of the common variations of meters and shutters are balanced out, and exposure errors are eliminated!

Shoot in bright sunlight or in shade, the lens opening adjusts automatically for correct exposures. When light is too dim, a signal tells you to use flash.

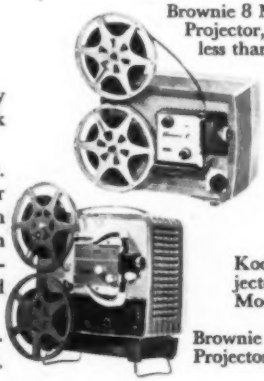
You get snapshots or slides, 12 beautiful pictures to a roll on economical 127 film. Can't take an accidental double exposure. Brownie Starmatic Camera costs less than $30, or as little as $3 down.

"Electric Fingers" Thread the Film For Automatic Movie Projectors

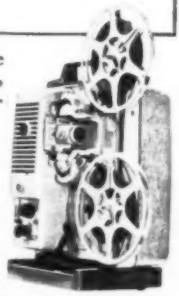
Now you can get your movie shows under way with no fuss, no fumbling. Just choose a Kodak automatic movie projector.

All you do is insert the end of the film in a slot. "Electric fingers" then take over, to start your show automatically. They thread the film through the gate . . . form the loops . . . and guide the film down to the take-up reel, which picks it up automatically! It's quick, reliable, all automatic, and astonishing to see.

There's a Kodak 8mm automatic movie projector in every price range. See them at your dealer's.



Brownie 8 Movie Projector, A15, less than $55.



Kodak Cine Showtime Projector, A20, less than $125; Model A30, less than $150.

Brownie 500 Movie Projector, A5, less than $95.

from Kodak

Sensitized Photo Balloons Used in Diagnosis of Stomach Cancer

Rubber balloons coated on the inside with special Kodak photographic emulsion are being used with great accuracy to detect stomach cancer.

A patient is fed a tiny amount of radioactive phosphorus 32. Then he swallows an emulsion-coated balloon which is inflated until it is in contact with the stomach walls.

Cancerous tissues absorb more "P32" than normal tissues, and show up as darkened areas on the balloon when it is removed from the stomach and processed.

Knowledge gained by Kodak in creating such specialized products for medical, scientific, and industrial use, also helps produce finer films and equipment for amateur photography.

Dark areas on balloon reveal presence of stomach cancer. Kodak scientists worked for several years to develop a fast, flexible emulsion for the balloon coating. The balloons are now available to physicians.

Versatile Slide Projector Lets You Use Any of 3 Changer Systems

This handsome new Kodak 500 Projector, Model B, puts the accent on versatility. It lets you choose any of *three* modern slide-change systems—fast-action Kodak Readymatic, Airequipt magazine, or Universal tray.

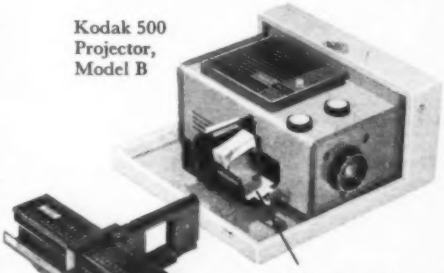
And it gives you great performance. The 500-watt lamp and big condensers show both 35mm and super slides brilliantly. The 4-inch *f*/3.5 lens gives big-screen images even in small rooms.

A quiet, turbine-type blower pulls cool air in over your slides and around the lamp. Elevation and focus knobs are on top for easy adjustment. Handsome two-tone styling. Sturdy case cover.

With Kodak Readymatic Changer and 4-inch lens, Kodak 500 Projector, Model B, is less than $68, or as little as $7 down. Ask your dealer to show you how smoothly it works with each of the changers.

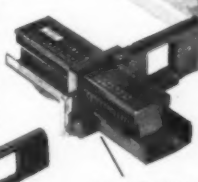
Prices are subject to change without notice.

See your dealer for exact retail prices



Kodak 500 Projector, Model B

Kodak Readymatic Changer for cardboard mounts. Quickest from slide-box to screen.



Kodak Universal Changer is versatile—handles card, glass, plastic or metal mounts in trays.

Airequipt Magazine Changer stores each slide in a sturdy, durable metal frame.

EASTMAN KODAK COMPANY, Rochester 4, N. Y.

See Kodak's "Ed Sullivan Show" and "Adventures of the Nelson Family"

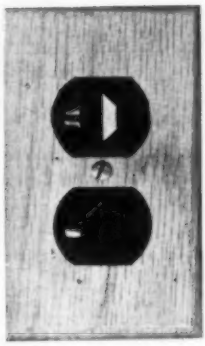
Kodak TRADEMARK

MI's HARDWARE STORE

PLASTIC shaker-pitcher holds two qts., won't break; retails for $1.49.

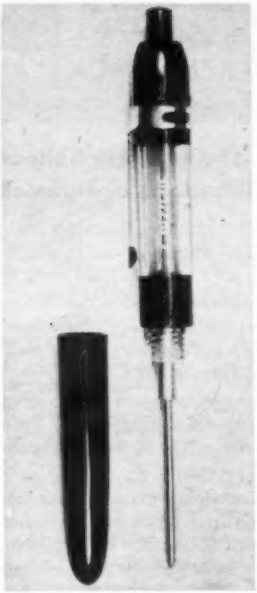
Plastray Corp., 1225 W. Maple Rd., Walled Lake, Mich.

Tapes of spring steel show diameter and circumference of round stock with a single measurement; prices range from $20 to $60 depending on length; write Pi Tape, 7952 North Ave., Box 397, Lemon Grove, Calif. . . J. C. Whitney Co., 1917-19 Archer Ave., Chicago 16, Ill., has just issued its new giant 388-page catalog of accessories and parts for all 1960 American cars (send 25¢ to cover mailing) . . . A booklet showing redwood garden installations is available free from California Redwood Assoc., 576 Sacramento St., San Francisco 11, Calif.



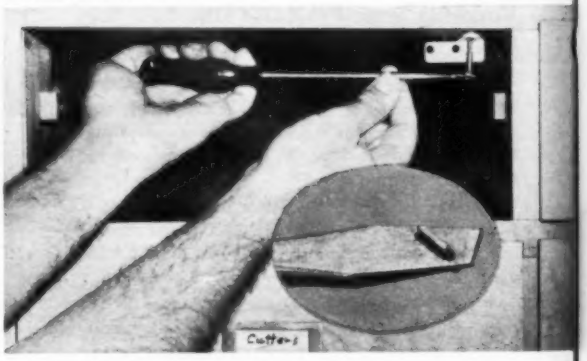
WOOD - GRAINED switch and outlet plates to blend with any wood wall panels are now on the market.

Superior Panel Plate Co., 606 Mead Ave., Sheboygan, Wis.



OIL DISPENSER fits in your pocket, has a push-button oil-flow control; costs $2 ppd.

Hollis Co., 1133 Broadway, New York 10, N. Y.



3-WAY SCREWDRIVER'S offset blades at each side of main blade permit close-quarter work; 89c ppd.

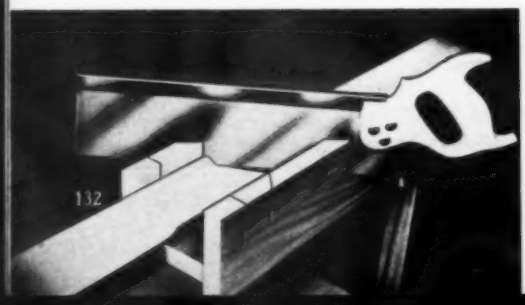
3-Way Screwdriver, 6A, 340 Broadway Ave., Winnipeg 1, Man., Can.

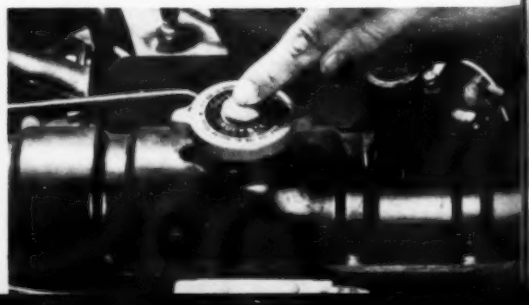
MITER-KIT includes miter box of tough Fiberesin and a backsaw; $6.95 complete.

Craftwood Corp., Bank of Oconomowoc Bldg., P.O. Box 87, Oconomowoc, Wis.

SAFE T CAP controls auto cooling-system pressures, prevents scald hazards; $1.75.

World Sales Co., Dept. M-9, 303 N. 3rd St., McAllen, Tex. (Specify year, make, model of car when ordering.)





Tips from Weldwood—the people who know what's good for wood

Kill termites, prevent rot with WELDWOOD WOOD PRESERVATIVE . . .

Add lasting color to outdoor wood with WELDWOOD EXTERIOR STAINS . . .

Seal and prime outdoor wood with WELDWOOD FIRZITE . . .

Protect and beautify outdoor wood with WELDWOOD SPAR VARNISH . . .

WELDWOOD® WOOD PRESERVATIVE, essential where wood is in contact with earth, contains full 5% pentachlorophenol.

WELDWOOD EXTERIOR STAINS, 4 beautiful "woodsy" colors: Redwood, Driftwood, Cascade Green, Sierra Brown.

WELDWOOD FIRZITE®, a penetrating resin-sealer for fir plywood, pine, etc. Comes in *Clear* to prevent "wild grain" in stain jobs; and in *White*, a pigmented prime coat to combat checking in paint jobs.

WELDWOOD SPAR VARNISH, durable, high gloss exterior clear finish that resists discoloring even in severe weather.

WELDWOOD
WOOD FINISHES

SAVE $

DELTA HOME

on two of the most useful

Cat. No. 34-005 Delta Homecraft 9" Tilting Arbor Circular Saw equipped with Extension Wings and Steel Stand.

Basic tool in every woodworking job—the 9" Circular Saw delivers all the power and built-in precision you need for faster, easier, more accurate cutting. It offers big capacity for ripping, cross-cutting, mitering or beveling—plus extra operations such as dadoing and tennoning. It's the saw you'd want at *any* price—yours to start enjoying *now* at a big $22.05 savings.*

DON'T MISS THIS LIMITED TIME OFFER!

Hurry on down to your Delta Dealer (listed under "TOOLS" in the Yellow Pages) or visit your leading Department, Hardware or Building Supply Store soon.

SAVE $

WORKSHOP SALE!

power tools you can own

Cat. No. 49-576 Delta Dust Collector complete with motor and hose.

You can use the new, improved Delta Dust Collector with almost any woodworking power tool for collecting dust and chips at the source—use it for general cleaning in your basement, attic, and garage—or use it for paint spraying and dozens of other jobs. You'll really appreciate the versatility and portability this unit provides—and even more, the $10.00 you save* on it during this sale.

**Prices and savings slightly higher in the West*

GET VALUABLE SHOP BOOK

Deltacraft hard cover book, GETTING THE MOST OUT OF YOUR CIRCULAR SAW, gives you 120 pages crammed with shop-tested ideas, photographs and drawings. Send check or money order for $1.00 to: Rockwell Manufacturing Company, Delta Power Tool Division, 556K N. Lexington Ave., Pittsburgh 8, Pa.

DELTA POWER TOOLS

another fine product by

ROCKWELL

Denis Drysdale, of Lafayette, Indiana, checks the engine of his classic Auburn cabriolet.

"Quaker State keeps the engine of my classic 1936 Auburn trouble-free, and my new car too!" This Series 852 beauty boasts a 150 hp. straight 8 engine, big for its day, and dual rear axle ratios. Performance is still superb, thanks to the loving care it has always received. Important item in that care: Quaker State Motor Oil. Its long-lasting protection and complete lubrication guard any car best, new or old! Super-refined from 100% pure Pennsylvania crude oil. It's the finest motor oil your money can buy.

Available most everywhere . . . always ask for Quaker State by name.

For the name of your nearest dealer, call Western Union by number and ask for Operator 25.

QUAKER STATE OIL REFINING CORP., OIL CITY, PA.
Member Pennsylvania Grade Crude Oil Association

Planter Fence

[*Continued from page* 111]

Nail three 1x2-inch spacers between the half-inch plywood sides—one in the middle and two snug against the inner surface of the ends—with two-inch finishing nails. Bore a row of ¾-inch holes through the plywood bottom, then staple on some Fiberglas screening, fastening it to the spacers with one-inch nails. To prevent rot, creosote the inside surfaces of each box; The ends and guides of the curved box are treated similarly.

Now nail and glue the ends to the bottom, attaching the outer side in the same manner. Bore three countersunk 5/32-inch holes in the side and secure it with 1½-inch flathead wood screws. Saw off any excess wood, then plane the ends smooth.

Three of the fence's four 2x4 posts are five feet long; the fourth is a ten-footer. There are twelve straight 1x4-inch slats and six curved ones, all dadoed as shown. Each post has a quarter-inch chamfer at the top.

The two post caps are screwed to the end posts before installing the slats. The slats are then nailed between the dadoed posts.

Near the top of the name post cut a dado 1½-inch wide and ¾-inch deep to take the name plate hanger. The size and dimensions of the three components comprising the name-plate assembly are shown in the plans at the top of page 111. The name plate is suspended from hooks by two short lengths of brass chain.

To erect the fence, dig the two post holes for the first section. Before setting the posts into the holes, coat their underground portions with creosote. Level the section before replacing the fill.

Since the curved slats join the two straight sections at right angles, the position of the second straight section is determined by inserting a curved slat in the dadoes of the end sections to determine where the post holes for the other end section will be dug. The curved slats are then installed in their respective dadoes and nailed to the posts with 2½-inch finishing nails.

Finish your planter fence with two or three coats of good exterior house paint. A white fence with green trim is good.

RIDE THE SUNNY SIDE OF THE STREET!

DELUXE DUO-GLIDES
— world's finest motorcycles

SUPER-10
— most economical lightweight

SPORTSTER CH
— the active man's motorcycle

SPORTSTER H
—most versatile motorcycle

TOPPER — world's top motor scooter

THE NEW SPRINT
— a new class of motorcycling

Get on the beam in 1961 — get there on one of these *six* outstanding models. If your spirit is *wheeling,* you'll visit your Harley-Davidson dealer today. He has 1961 models on his floor ... easy-pay plans that fit your pocketbook. Or mail the coupon for this colorful new folder.

HARLEY-DAVIDSON MOTOR CO.
Dept. MI,
Milwaukee 1, Wis.

Send me the facts — how I can have more fun in '61 on a Harley-Davidson motorcycle.

Name .....Age .....

Address .....

.....

HARLEY-DAVIDSON MOTOR CO., Milwaukee 1, Wisconsin

[*Continued from page* 139]

affair with a single float. There is no choke setting at the carburetor because the choke is manual. There is, however, a dashpot (throttle brake) control for this carburetor on Falcons equipped with Ford-O-Matic. This particular Holley carburetor model provides an acceleration pump stroke adjustable for summer or winter driving, although this adjustment is no longer built into the more complicated carburetor models.

Now let's go on to the two-barrel Ford carburetor used on the current Ford V8 292 and 352 engines, and the Ford four-barrel job that comes with the V8 352 engine and is standard equipment on the Thunderbird. To understand the four-barrel carb it is necessary to meet the two-barrel unit first because the former virtually is a double version of the latter.

A dual-barrel carburetor has one air intake, a choke and a float chamber, but has a separate fuel jet, venturi tube and throttle for each barrel. It may also have two floats. The idea originally was that each barrel would feed one bank of cylinders in a V8 engine, although this type carburetor also is used now for six-cylinder engines. It can be used to provide more uniform distribution of fuel to the cylinders, but also can function in such a way that the second barrel serves as a reserve to amplify the first when power and performance are needed.

Although a four-barrel carburetor is in a sense a dual two-barrel it has certain important differences because it is designed for use on high-powered V8's of high compression. The second half of the carburetor is thus designed to function at higher speeds and under a greater power demand. This is partly accomplished by using two of the throttle plates as secondary control and two as a primary control. They have only one acceleration pump, one set of idle needle valves and one power system.

Although twin four-barrel carburetors have been installed as standard equipment on some stock cars, they must be adjusted with painstaking precision. The Rochester 4GC, for instance, is a four-barrel job with two secondary barrels designed to take over whenever the primary system is at half throttle or over.

Oldsmobile introduced the idea of the triple two-barrel carburetor. While only the center unit has a choke and power system, all three carburetors are involved in the part-throttle system. The engine gets its extra mixture for heavy loads and high speed from the center carburetor's power system.

Carburetors meter fuel in various ways. In some cases it is by air bled jet or metering pins. The venturi (which is the throat into which fuel is sprayed or injected as air passes through at high velocity) may be single, double or even triple.

No matter how simple or advanced is the carburetor on your car, it must receive a certain amount of minimum maintenance to keep functioning reliably. For one thing the float level must be exactly as the manufacturer recommends for your make and model car. Any adjustments to the idling mixture should be made only when the engine is hot. Turning the adjusting screw (or screws) clockwise, leans the mixture; counterclockwise turns enriches it. Again, exact specifications must be followed when making these adjustments.

If your engine is hard to start, idles raggedly and fouls up the spark plugs, chances are that its idle jets or passages have become clogged.

Needle valve stickage or float trouble is indicated by surging when the engine is running, by stalling or by fuel leakage around the carburetor and by low gas mileage.

If your carb has a vacuum piston in its power circuit, a tendency of the engine to run roughly and to foul the plugs may be the result of a weak piston spring or sticking of the vacuum piston itself.

Hesitation and pinging when trying to pick up speed following a sharp turn may indicate that the floats do not have enough clearance and are binding against the wall.

By taking care of the minor repairs that are required from time to time on your carburetor, the chances are that regardless of the complexity of your unit you *will* be able to avoid the expense of major servicing. •

Styrofoam Raft

[*Continued from page* 113]

enamel can be used. Another method is to provide a skirt around the sides which extends below the waterline; then the gasoline, which floats on the surface, cannot affect the blocks.

The following chart is included as a guide to the purchase of Styrofoam:

SIZES	BUOYANCY FACTOR	CU. FT.	WT.
7"x20"x9'	500 lbs.	9	18 lbs.
10"x20"x9'	750 lbs.	12.6	25 lbs.
35"x33"x9'	2860 lbs.	52	80 lbs.

NOTE: Price is approximately $1.50 per cubic foot.

Styrofoam is made by The Dow Chemical Company and can be bought throughout the country. Check your telephone directory for a local distributor. •

• always tastes fresh
• mild, mellow flavor
• cool 'n' steady burning

R. J. Reynolds Tobacco Co., Winston-Salem, N. C.

PRINCE ALBERT

America's Largest-Selling Smoking Tobacco!

GROUP PICTURE of new members in Brownie troop sold nine copies—one went to the local newspaper and eight to parents and scout leaders.

MAKING MONEY WITH YOUR CAMERA

There are countless opportunities to take and sell pictures right in your own neighborhood.

By Milton Klien

I NEVER set out to make money with my camera—it just happened. A friend would ask me to take a picture of a new niece or a club gathering and I was only too happy to comply. Taking pictures with a purpose increased the enjoyment of my hobby and delivering a couple of good prints to a delighted recipient added further pleasure. But the thing never ended there. Others would see the prints and want copies. What could I do? I couldn't refuse and I couldn't make them free. The result was that I found myself in business—not full time but a good part of the time.

The prices are reasonable: $1.25 for the first 8x10 and $1 for each reprint; $1 for the first 5x7 and 75 cents for reprints; and 25 cents for each 3¼x4¼ wallet-size print. I usually don't bother with 4x5's because they take as much time as the larger ones and are not as impressive. I always use double-weight paper because the prints dry flatter and

GRADUATION photos are recurring source of income. Two large and four wallet-size prints were ordered by this boy's mother.

THEATRICAL GROUP member needed display photo. She bought six copies of this one and more work is due from other members.

NEWLY BUILT school was the subject of several photographs. Twelve prints of the corridor sold to architect and contractor.

HALLOWEEN is dress-up time for youngsters and a neighbor ordered four prints of this shot for some distant relatives.

BRIDGE GOES UP and the camera goes into action to record progress. Series was sold to the engineers and the contractors.

ENGAGED couple took four large prints of this one and also had small ones made for use in photographic thank you cards.

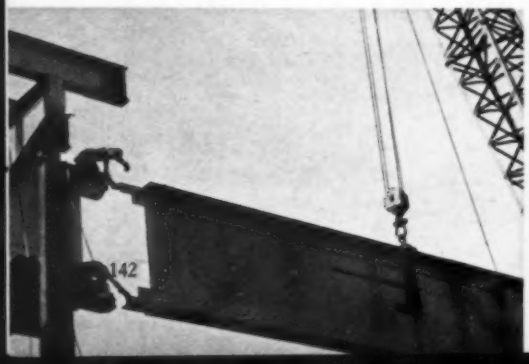
stand up better to the inevitable handling. The low prices sometimes seem a mistake in view of the picture-taking and processing but they do pay off in volume. Most of my work comes through recommendations from satisfied customers and a large part is initiative—I go out and take pictures I think people will want.

For instance, I always carry my camera to and from my regular job. Once, at the scene of a highway accident, I photographed the vehicles involved and took some general area views. Two prints sold to the local newspapers, two sets sold to the motorists and one set sold to an insurance company. Cost of materials? $4.07. Profit for carrying my camera? $27.93.

When my daughter had a part in the ceremony dedicating her new school, I went to photograph her on stage. I also photographed the officials, including our congressman, in the act of presenting a flag. One print sold to the newspaper and a set presented to the principal was displayed on the bulletin board with a credit line. Orders for four dozen prints then came in from parents of children who appeared in the pictures. Ceremonies of any kind are a good bet for print orders.

During a period of construction at my place of [*Continued on page* 170]

CONSTRUCTION of any kind makes a good subject on a speculative basis. Sales are almost certain if you make a complete set.



CHORAL GROUP sang, the shutter clicked and seventeen orders came in from parents who liked the way their children came out.

[*Continued from page* 107]

Tips on carpet buying:

Don't run light-colored carpeting to the door of the house or apartment. It will be sure to soil. Use tile or a similar hard-surface material or a dark rug at the entrance.

Irregular surface textures (tweeds, twists) don't show crushing, shading (pile going in different directions), soil and wear as readily as regular surface textures (velvets).

Expect shedding for a few months; it doesn't mean there's anything wrong with the carpet. If tufts "sprout," snip them off with a manicure scissors; *don't pull them out.*

"Tackless" installation, while a little more costly conventional tacking, doesn't show nail heads. Furthermore, the carpet can be taken up if necessary. Actually, there are plenty of tacks in a tackless job. This type of work is best done by a professional carpet layer. What he does is to nail down a series of narrow wood strips all around the perimeter of the room in which the rug is to be laid. These strips have a series of small sharp nails projecting outwards toward the rug surface. The strips are nailed about a quarter-inch away from the walls. The carpet layer then cuts the carpet so that it projects about an inch or so beyond nails in the tackless strip.

He then uses a tool called a kicker. This is a device which enables him to stretch the rug over and slightly beyond the nail points in the tackless strip. Next he uses a knife to cut away the carpeting at the wall surface and tucks the cut edges into the space left between the nail strip and the wall. The Roberts Company supplies most of the carpet installing gear to professional carpet layers. In addition to the wood carpet laying strips, this company also manufactures metal molding called Nap-Lok binder bars in black, gold and aluminum, which are used to bind the free edge of a carpet when it is adjacent to a linoleum or a tile-covered floor.

Sometimes room proportions permit use of square carpet sections which can be turned occasionally to distribute wear. Hardest wear is on the stairs, particularly at the edges. Use a good pad here. Also have an extra foot or so of carpeting folded under a couple of the top risers. Just before wear becomes obvious on the leading edge, the carpet can be re-layed and moved down a couple of inches, the surplus being folded under the bottom risers.

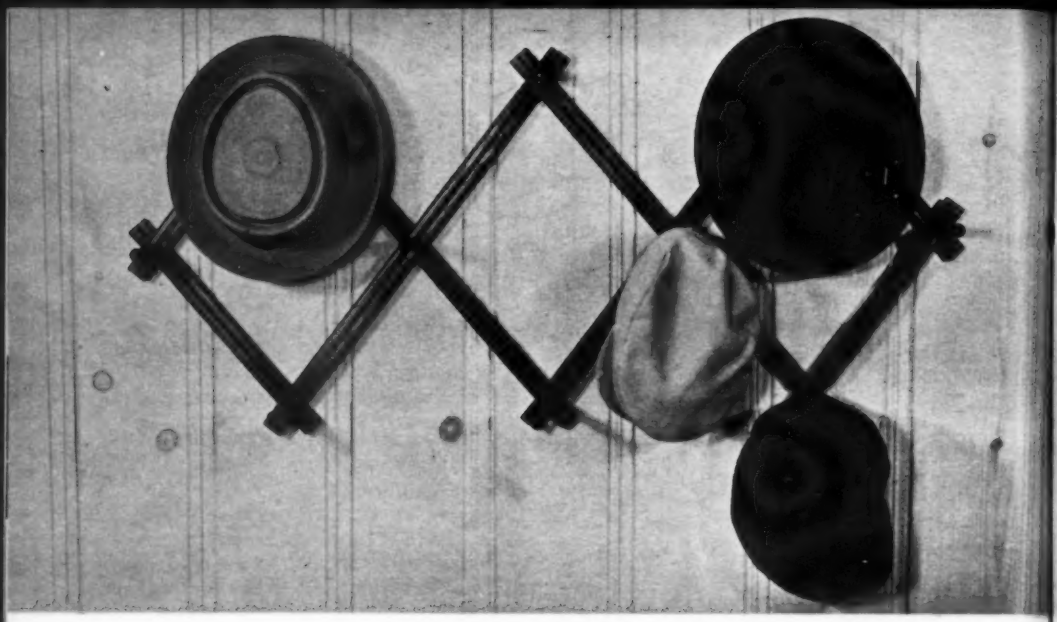
You can prolong your rug or carpet's good looks and life by lifting heavy furniture rather than dragging it. (If too heavy, pull furniture, never push.) Rest feet of furniture in cups to minimize pile crushing. Re-locate weighty furniture by moving it a few inches. Crushed pile can be brought back with a steam iron and vacuum cleaner. Don't shake or snap small throw rugs to dust them. It will break the yarn in the backing. Vacuum the rug cushions twice a year.

Daily carpet sweeping, weekly vacuuming and a yearly professional cleaning are good house-keeping musts. When the rugs are in the shop, have repairs made to frayed edges and worn areas. Professional services include binding, serging, refringing, reweaving Orientals, burling domestics, re-hooking hooked rugs, sewing, dyeing, overcasting and other repairs as well as cleaning and spotting.

Stains. Water stains can be serious if the water soaks through to the backing and is ignored. Fibers in the pile serve as wicks and draw discoloration from the backing and sizing up to the tufts where it will show. Leaky radiators, wet umbrellas, overflowing tubs, spilled water or windows left open in the rain are typical causes. Dry up all water when the accident occurs and you'll have no trouble. Use a clean, white bath towel. Then place a fresh towel on the wet area and place a flat weight, such as a brick or an iron, on top. A fan directed on the back of the rug is an alternate method of accelerating drying time.

Watch especially for water from melting snow and ice in winter. Another winter threat comes from salt and ashes. Salt attracts moisture, keeping the rug damp. Fading may result since some dyes are affected by salt. Ashes are usually alkaline and thus harmful to dyes and some of the fibers used in rug manufacture. Scatter rugs and frequent vacuuming help protect

[*Continued on page* 154]



AN OLD-FASHIONED HAT RACK

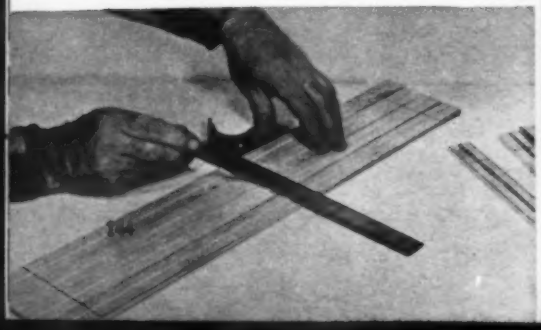
REMEMBER those pantograph hat racks of years gone by? Though long out of fashion, lately they've begun to enjoy a new popularity—perhaps as mementos of the past.

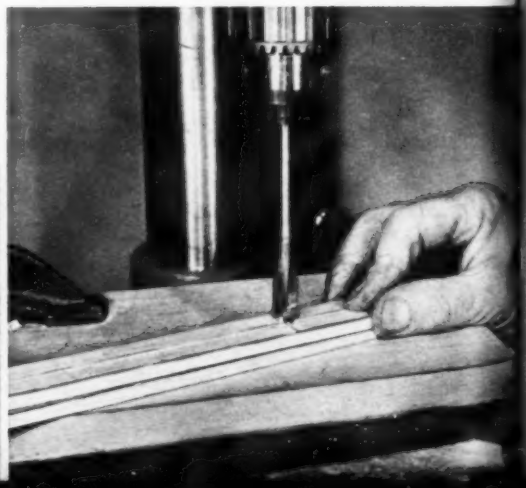
This ten-peg rack is made of ¼x1x⅛-inch trellis stock and ½-inch-diameter dowel pegs. Start by sawing the wood strips into eight slats: four 24 inches, and four 13¾ inches in length (for a larger rack simply add more slats). Arrange these pieces side by side and mark their centers 1¾ inches from the ends. Bore through these center marks with a $\frac{1}{16}$-inch drill, then drill the ½-inch-diameter holes for the dowels through the front slats only.

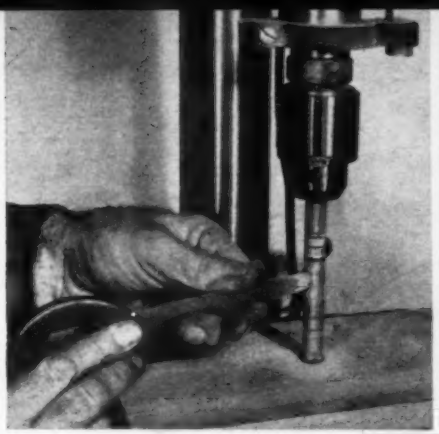
Next saw ten 4½-inch dowels for the hat pegs. These are shaped by turning them on a "vertical lathe" formed by

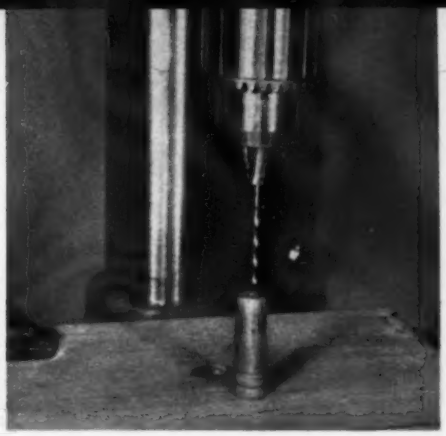
PEGS go in half-inch holes bored through front slats a quarter-inch from each end.

TRELLIS STOCK (below), already scored on circular saw, is next marked for drilling.





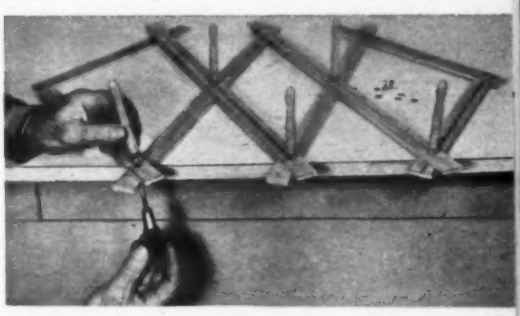




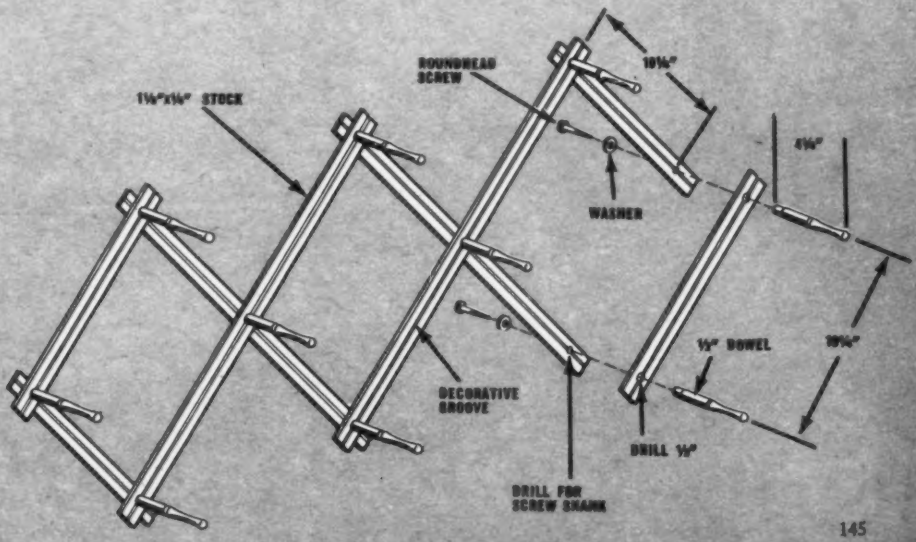
FILE PEGS to shape (left) using the drill press as shown; hole in clamped-down piece of wood serves as "tailstock." At right, pilot hole for screw is drilled in end of peg.

the drill-press chuck and a wooden "tailstock" clamped to the drill-press table as shown in the above photographs. Decorative scoring of the slat faces was done by running them over a saw blade reaching *slightly* above the saw table.

Stain the rack before assembling it. To assemble, push the dowels into their holes, fit the back slats in place and turn inch-long No. 6 wood screws, with washers, into the ends of the dowels from behind. Fasten rack to the wall with two or three wood screws.—*Ralph Treves.*



FIT PEGS in the holes, then fasten them from behind using wood screws with washers.

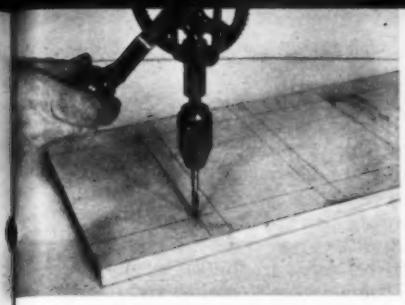


Student's WORK CENTER

Textbooks, notebooks and homework are arranged by subject and date in this easily-built rack.

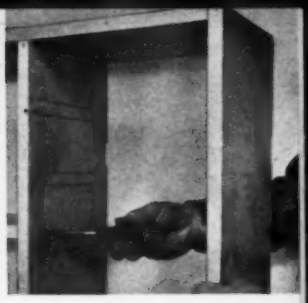
By Ralph Treves

ONE way to help a student put maximum effort into homework is to build this handy wall rack which holds books and notepapers in orderly arrangement. Each subject has its separate shelf and there are shelves labeled for each school day so that reports and notebooks are readily available when due for presentation. Total cost for the 30 feet of 1x10-inch shelving used in construction is less than six dollars and simple butt joints are



HOLES are bored for pegs which support side shelves.

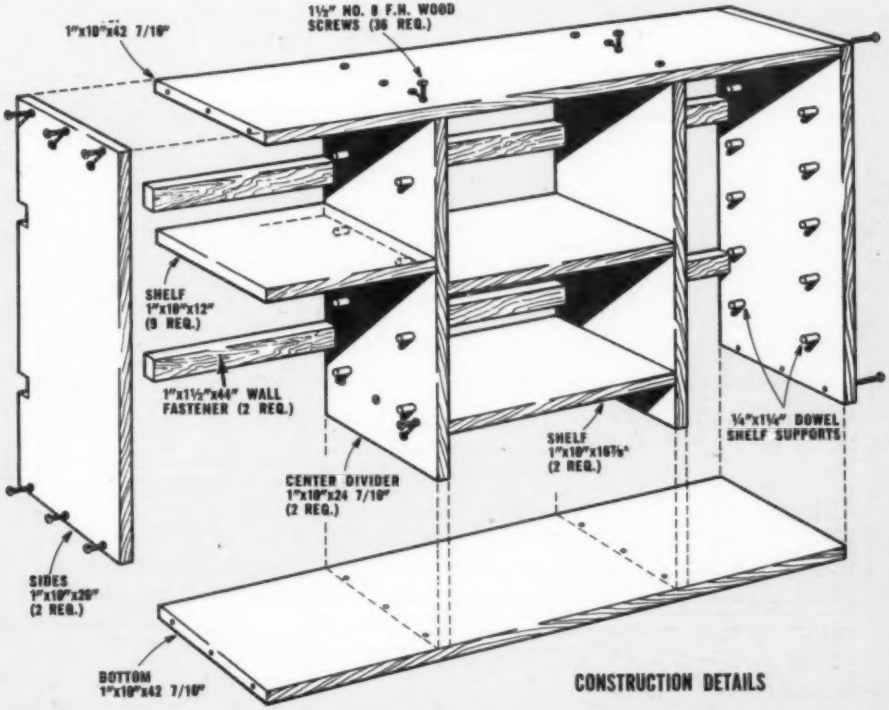
BACKS of vertical boards are rabbeted for mounting battens.



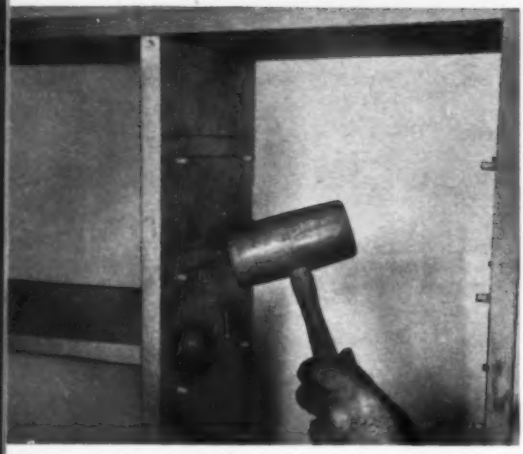
SCREWS secure the two center shelves.

used throughout except for a few easily-cut rabbets into which the mounting battens are recessed.

When the top, bottom and vertical members have been cut to the dimensions indicated, the location of each shelf and butt joint is ruled off on the members. Location of the removable shelves on each side is best done by clamping an end piece and the adjacent vertical member together, allowing a 25/32-inch overlap at each end of the shorter member. Then a square can be used to mark the shelf guide lines on both pieces in



CONSTRUCTION DETAILS



PEGS are driven in directly under guide lines drawn to locate removable shelves.

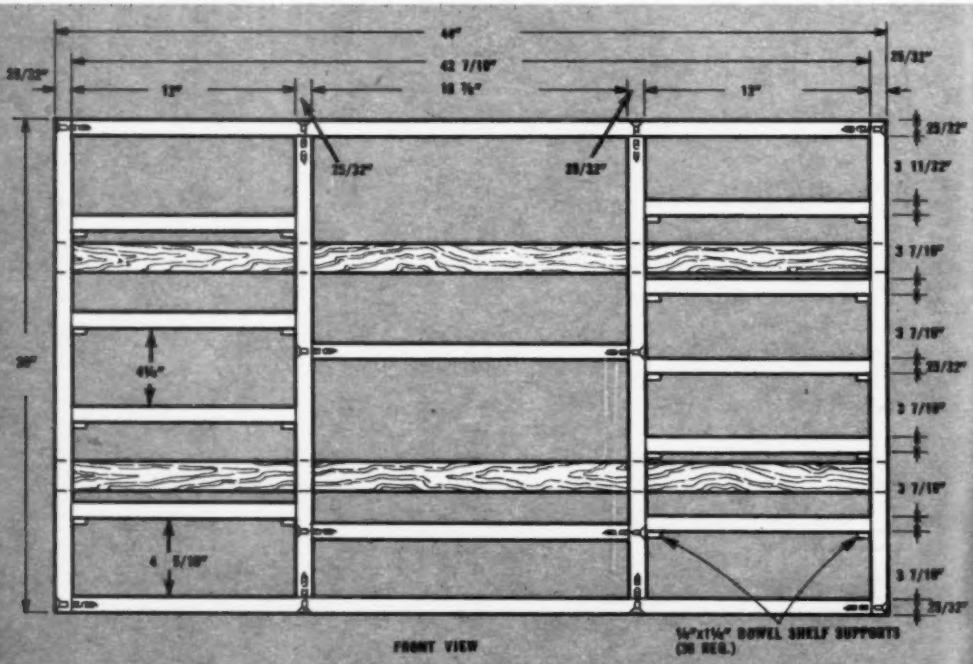
one operation. All the spacing dimensions are given for the right side; at the left, the top shelves are spaced 4¼ inches apart and a $4\frac{5}{16}$-inch spacing is used at the bottom.

After ruling the guide lines for the removable shelves, holes are bored for the dowel pegs that support them. These holes should not be bored all the way through, so use a depth stop on the drill.

By clamping the two center dividers together, guide lines for the center shelves can be ruled in the same manner. The top spacing is 11 inches and the one below is 8¾ inches. This leaves a shallow bottom compartment which can be used for paper.

When the shelves have been cut to size, the unit can be assembled, using 1¾-inch, No. 8 flathead wood screws where indicated. Screws also hold the mounting battens in the rabbets. Then the entire unit is given a couple of coats of paint.

To mount the unit to the wall, some toggle bolts are passed through the battens and a couple of angle irons are used at the top corners. The removable shelves can then be installed on the pegs and the essential finishing touch is the labeling of each shelf with subject titles and days of the week. •



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Picture Frames

[*Continued from page* 114]

two unique jigs described here, frame making enters the realm of child's play.

If you plan to make a number of frames, a jig for cutting accurate 45° angles will prove helpful. This jig is shown in the diagram on page 138. Make it of cherry or some other hardwood that will resist the effects of varying humidity and temperature. The second jig is a type of simplified frame clamp. This device requires only one C-clamp to grip and hold together all four of the glued joints of the assembled frame.

Common moldings used in home building make ideal frame material because they are made in a variety of widths and are already preshaped to various contours. Many of them are prerabbeted; if not, it is a simple enough matter to cut in the necessary grooves using a dado head with your power saw.

To cut and assemble the frames, refer to the sequenced photographs. The type of molding pictured is called "drip-cap" and sells for about twelve cents a foot. Hence a 16x20-inch frame requiring some eight feet of molding will cost about one dollar. •

BRUSH GLUE over all the mitered edges, assemble in the jig, then tighten clamp.

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WELDWOOD
WOOD FINISHES

Products of United States Plywood

"Stop, Thief!"

[*Continued from page* 128]

for smoothing out the rough edges of holes. No test equipment is necessary if the wiring corresponds to the diagram; the bell itself is an indicator of the circuit's tuneup and performance.

The first step is to drill all the holes in the case. The parts themselves can serve as templates. Using the illustrations as a guide, position each part and mark the mounting holes. Just be sure that adjacent parts do not physically interfere with each other and that the cover of the case can be slid on without striking anything. You'll find it convenient to install the AC line cord first. Put a strain-relieving knot just inside the hole and solder the wire to the terminal strip before bolting anything else in place.

The tube socket is fastened to a small piece of perforated phenolic or Masonite board in which a mounting hole is made. This board is held in place by a small L bracket with approximately ⅝-inch arms (another hardware store item). Insert the tube in the socket before tightening the assembly in place. If the tube requires replacement, which is unlikely for a long period of time, the L bracket is loosened and the board is swung off to one side.

Wire the unit in any sequence but mark off each lead on the drawing as it is installed. This will help prevent error or omission. The only precaution is to watch out for bare, uninsulated wire touching the metal case. This could cause the case to become "hot" and create a shock hazard. The sensing wire, however, is isolated and may be safely handled while the unit is in operation.

The coil used in this circuit is a convenient factory-wound unit with a tuning capacitor already mounted on it. It's important to solder to the correct lugs as shown in the diagram. Also check with the lug layout diagram packed with the coil.

When construction is complete and you're sure there are no "cold-soldered" joints or other errors, the unit is ready for tune-up. A ¾-inch hole in the rear of the case provides access to the tuning capacitor. Before plugging in the AC line cord, close the capacitor by screwing it clockwise. *Don't force it!* Firm resistance will be felt when the end of its travel is reached. A non-metallic screw driver (fashioned from a piece of wood) is preferable to a metal one; there will be less interaction with the circuitry.

Unravel several feet of sensing wire (stranded hookup wire will do) and plug in the line cord. After a four-minute warm-up, insert the screw driver in the tuning capacitor and *slowly* turn counterclockwise until the bell rings. Turn off the bell by holding the Reset button down and start turning the capacitor in the opposite direction (clockwise). After each eighth turn, lift your finger off the Reset button until the bell remains silent. Touching the sensing wire should now cause the bell to ring—and be silenced by the Reset button.

Two methods of operation are possible with the alarm bell. The tune-up just described will cause the bell to ring continuously though the hand has been removed from the sensing wire. But if the capacitor is screwed in farther, the bell will ring only while the hand is in contact with the wire.

Ten minutes of experimentation with the unit will reveal its characteristics; as the capacitor is screwed in, its sensitivity decreases until the bell can't be triggered. Final tune-up should be done after the unit is installed with the sensing wire attached to a doorknob or metal plate. •

PARTS LIST

C1	20 mfd electrolytic capacitor, 50 working volts
C2	.1 mfd tubular paper capacitor, 600 working volts
R	10,000-ohm resistor, ½ watt
RY	Plate-sensitive relay, 5,000-ohm coil, single-pole, double-throw contacts (Potter & Brumfield LB5-5000)
L	Capacity-operated coil (Miller 895)
SW1	Single-pole, single-throw switch (Cutler-Hammer 8280-K16)
SW2	Reset pushbutton, normally open (Switchcraft 101)
T	Filament transformer, 117 volts AC to 6.3 volts AC (Thordarson 21F08)
V	6BA6 tube and one 7-pin tube socket for same
BELL	6-volt household type
CASE	Aluminum, 3"x4"x5" (Bud Minibox CU-2105A)
MISC.	AC line cord and plug; perforated phenolic board (2"x1¼"); one 5-lug terminal strip; No. 6-32 nuts and bolts; No. 20 hookup wire; one ⅜" O.D. rubber grommet; two ⅜" O.D. rubber grommets.

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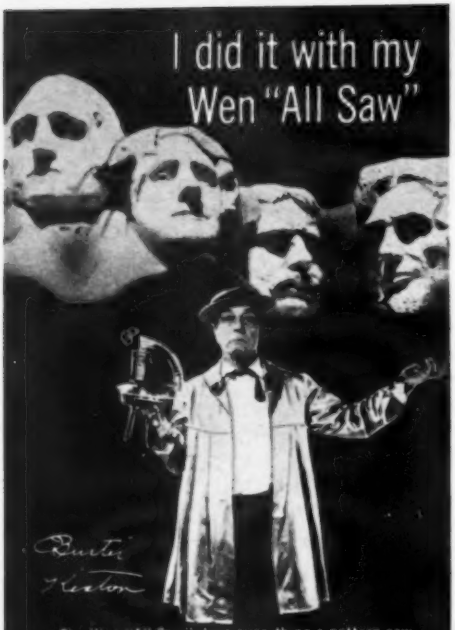

The Wen "All-Saw" does everything a pattern saw will do . . . more than a circular saw . . . many things normally done by a hand saw or nibbler — and many things that, until now, only a chain saw could do. In fact, the Wen "All Saw" will cut anything from a 6" log to intricate pattern work in wood, all metals, including steel thin gauge to ½", pipe and thin wall up to 2" in diameter. It cuts curves, circles, straight cuts or patterns in Masonite, Bakelite, tiles, formica, wallboard, Plexiglass, plaster-board, asbestos. Knife blade cuts anything normally cut with a knife. It's perfect for home workshops — yet it's UL "Industrially Rated." You get 7 blades, a rip guide and a circle cutter at no extra cost. $44.95

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⅜" 2-Speed Power Drill.....$29.95
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Rugs and Carpets

[*Continued from page* 143]

soft floor covering in the winter time.

As to the saying that ashes from cigarettes or cigars are good for preventing moths—phooey! Best bet is to keep the floor covering clean, especially when temperatures are fairly high. Spray around the edges of carpets and under furniture to inhibit moth larvae. Clean up areas of stain caused by food.

Rotating rugs exposes the dark areas in which moths and carpet beetles thrive. Use a vacuum cleaner thoroughly at least once a week to remove lint and hair from dark places. When the floor covering has a professional cleaning, the cleaner can apply a mothproofing compound.

Removal of spots when they're fresh is good, common-sense rug care. Never use soap, ammonia or washing soda on rugs or carpets because they're alkaline. Instead, use two simple home formulas plus a safe dry cleaning fluid.

Formula No. 1. A teaspoon of neutral soapless detergent (such as Dreft, Vel or Breeze) mixed with a half-pint of lukewarm water.

Formula No. 2. A teaspoon of white vinegar mixed with three teaspoons of lukewarm water.

Apply these to the stain with an eyedropper and sponge from the outer edge toward the center with a white, unstarched cloth and then blot. Formula 2 should remain on the stain about 15 minutes before blotting. Don't apply enough of either to soak the back of the rug.

For alcohol, coffee, tea or soft drinks, sponge with lukewarm water, then use Formula 1. If stain remains, follow with Formula 2. For butter and other fats, apply a dry cleaning fluid with an eyedropper and sponge with white, unstarched cloths. For eggs or gelatin, use Formula 1 and, if stain remains, follow with Formula 2. Fruits and fruits juices, ice cream or milk desserts call for lukewarm water, then Formula 1. If stains are of unknown origin, these formulas will do no harm but experimentation with other types of home cleaners may set the stain permanently.

A "dry" cleaning solvent is satisfactory on wool, rayon or nylon fibers for remov-

ing grease and oil film. Use the minimum and just damp-sponge the area, especially if the carpet is latex or rubber-backed. Excess solvent may leave a ring or damage the backing. Don't inhale the fumes. Leave the windows open to hasten evaporation. And don't smoke or operate electrical appliances nearby if you're using a cleaner marked "flammable." It's best not to use a dry cleaning fluid on cotton rugs; a detergent solution is safer.

Use amyl acetate, from any drug store, to clean up spilled nail polish. Don't use nail polish remover; it eats holes in some of the new synthetic fibers. Apply amyl acetate a few drops at a time and blot it up with clean, white tissues or terry cloth. Same applies to household cement or airplane dope.

To get rid of chewing gum in carpets, use a non-flammable household dry cleaning fluid such as Carbona. Apply it liberally around the outside and on the gum. Allow to remain three or four minutes. Lift off the gum with a dull knife or spatula. If the gum does not release readily, repeat the treatment, but use sparingly if the rug has a rubber backing.

Dry cleaning fluid is the best home remedy for ball point ink. Removal of ink spots has become increasingly complicated because of the wide variety of writing fluids now in use. Most inks are made to adhere to paper, a cellulose substance. Carpet backing is mostly cellulose and may act as a reservoir to feed color to the surface. Here's first aid for ink stains:

Blot up as much as possible at once. Use dry paper towels, tissues or white cloths. Blot, don't rub. Spread the spot as little as possible. Then call a professional rug cleaner. The idea of using milk on ink doesn't apply today; it's left-over from the days when all inks contained iron. Milk may set modern inks.

If you want to try cleaning up an ink spot yourself, try the following cleaning materials in order, continuing with each until the color quits transferring to the blotting material you are using.

1. A high-flash petroleum paint solvent from

[*Continued on page* 171]

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The 1961 Ford

[*Continued from page* 74]

of hard road tests, which included hairy cornering and control, but went back to the black-out for my high speed running.

The roadability and cornering properties of the '61 Ford are just about the same as a year ago, which means adequate family-use roadability—not the best in their class but not the worst. A few years ago Fords could out-corner and out-handle any car in their class with ease; this is no longer true. Like some others in its field it has made extra overtures to the tender bottom of Madame Suburbia which, in this writer's opinion, is a mistake because the best-handling car in Ford's class also provides a better ride!

My test job had Ford's new high-performance engine. This is available through all dealers (and I kept harping on this point) who are smart enough to order it. It is known as the "390 (*standing for 390 cubic inches*), four venturi carburetor, high performance" engine and this is the way dealers can order it. This engine with a hot cam, develops 375 horsepower at 6,000 rpm and 427 foot-pounds of torque. The compression ratio is 10.6:1—which means you'd better not load up the tank with lamp oil unless you're out to blow the piston tops. The slightly-more-standard 390-cubic-inch job has a compression ratio of 9.6:1 and develops 300 horsepower. Most typical of all, the 352-cubic-inch V8, has a compression ratio of 8.9:1 and pushes out 220 horses. Then there's the old 292-cubic-inch V8 available that wrings out 175 horsepower. The choice of engines is immense—it even includes a top-grade Six of 135 horsepower. But back to our wildcat, the only job available for testing before press time.

To start with, it had a real screwy rear-axle ratio of 4.89—a gearing usually reserved for coal trucks and rock movers. It was impossible to get a 0-30 mph time with it as the instrument just wouldn't react accurately when this screamer was belted. The rear end started bobbing up and down like Gene Krupa's drumsticks during a roll. Sixty mph (when actually checked by repeated testing) revealed a real kookie speedometer that showed 87 mph!

[*Continued on page* 158]

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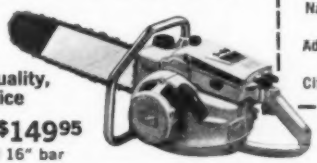

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The 1961 Ford

[*Continued from page* 156]

Regardless, this job banged out, for real, 7.5 seconds for 0-60 mph. All my other times (which included 5.8 seconds for 0-50 mph and 15.2 for 0-80 mph) were far too inaccurate to be classified as real, but the 0-60 mph time is accurate.

In trying to make high-speed runs with this bunny on the Ford test track, the electric tachometer bisecting my left eye climbed past the 7,000-rpm mark quicker than a sneeze due to the rear-axle gearing, though the over-the-ground speed was only in the neighborhood of 120 mph. This was an out-and-out engineering car for experimental use. I had a stick shift and I tried starting in 2nd gear a few times to calm it down but lost a full second this way in getting to 60 mph. It seems highly doubtful that Ford will ever sell one of these rigs with this axle ratio, though in other ratio combinations, I was assured by Ford men, there is quite a sizable market.

Though Ford, like the rest of the car manufacturers, can no longer (under A.M.A. regulations) engage in open racing competition, there is nothing to prevent them from making automobiles the buyers can use as they please. This muscular Ford is a wide-open invitation to anyone who wants hairy performance—whether it's a cop to use for outrunning a bank robber (and thus avoid being shot) or a NASCAR race driver to use in competition. I'm sure some of them will appear at Daytona Beach next Speed Weeks. Though I didn't have the more-or-less standard 352-cubic-inch V8 available for testing, I was assured by Ford Engineering that this job with an automatic transmission will be very close in performance to the 1960 models. These jobs averaged 12.8 seconds for 0-60 mph and had a top speed of just over 110.

In summing up, the new Fords, as always, represent solid, sound value. They are well thought-out industrial products. I still recall the time in France when I asked one of the head boys of Rolls-Royce what car, in his opinion, regardless of price, had the best materials. I was pretty surprised when he stated: "Ford engines have the best steel in the industry." As I said earlier, this is the 16th annual Ford model I've tested. Fords have come a long way since then. Today they have the lushness and size that many of our highest-priced cars had just a few years ago. In 1961, they're hanging their hopes on a potpourri of proven styling. It will be very interesting a year from now to see if they were right. •

Buick's New Compact

[*Continued from page* 78]

agers with just what gasolines are the best in each section of the country, and which ones should be avoided.

The Special as it comes from the factory will run on good regular gasoline but the Buick people aren't making any claims to fantastic gasoline mileage performance. In fact, Chief Engineer Kintigh told me that the buyers could expect 21-22 mpg in ordinary use, which is several miles per gallon less than some of the other smaller cars are claiming. Regardless, if the Special can deliver better than 20 miles to a gallon on regular gas in normal use (and it certainly should), this seems pretty economical considering the hot performance the car offers.

The big deal about the new Buick Special V8 engine is the fact that it is made of aluminum, with steel cylinder liners. Aluminum engine construction has two big advantages: It cuts down considerably on weight, and aluminum's heat-dissipating properties are a lot better than an iron block's. The entire Special engine only weighs about 325 pounds—and its heat-dissipating factor will help fight engine ping. As a general rule of thumb, the compression ratio of an engine using any given fuel can be slightly higher where heat dissipation is accelerated. This fact will help that 8.8:1 compression ratio with some of our sloppier fuels.

To look at the new Buick Special another way, it's either a giant compact or a midget big car. For example, it has a 112-inch wheelbase. You old Ford fans might recall that the early postwar Fords only had 114. The overall length of the new Special is 188 inches and that of the old Ford was 194. So this new car is smaller but not excitingly so. Then bear in mind that the old postwar Ford bragged of 100 horsepower and the new Special claims 155. As late as 1950 Cadillac only claimed 160

horses—so you can see that we have a new breed of cat in this smaller Buick.

Up until now we've been strictly in the yak-yak department—so let's take this little geranium out on the proving grounds to find out what it really does and is. Stylewise the car is very similar to the bigger Buicks. In fact, there has been no attempt to hide the friendly relationship. The overall height of 52 inches is sports car height of just a few years ago. The front grille is as neat as the belly button on a skin diver and the car has a good fastback roofline. All in all, the appearance is not only trim but functional as well.

Once under way, this car picks up steam like a pants presser's lungs and when you finally unravel it (as I did on the big GM Proving Grounds) you're logging between 96 and 98 mph. As I've yet to find the perfect car (but am always looking) I had a few words with Mr. Kintigh about the suspension. For my dough, the Special rolled far too easily and this soft suspension, which does give it an excellent pogo stick ride over potholes, is one of the reasons why at high speeds (meaning flat-out) I found the road wander in a crosswind uncomfortable. When I really bore down on this, Mr. Kintigh told me, "You like hotrod suspension." He also asserted that more people are interested in a soft ride. I then stated my belief that most of the so-called "public demand" for a soft ride is greatly exaggerated. I cited my own car which not only is as solid as a rock but rides better than any soft-suspension car. At this he told me that the Specials we were testing were early non-production models and that the car might very well have stiffer suspension and shocks before the production jobs are released to the public. I sincerely hope they will. However, even if they don't, for a few bucks you can buy—and have the dealer install—a set of heavy-duty shocks which I feel will tie the balloon to the ground satisfactorily. (Incidentally, about 80 per cent of America's cars could be made much better with real shock absorbers, which today must be installed by the buyers.)

In summing up, Buick's brand-new entry in the so-called "compact car" race is in some ways a very happy compromise between too-small and too-big. It is good-

[*Continued on next page*]

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looking and has plenty of room for four people to be comfortable in (there isn't a comfortable five-passenger car being made in America that I know of). The Special is powered by a brand-new, gutty aluminum V8 engine—the first V8 in the compact field. This car should appeal to the buyer who has been on the fence about going from a large car to a compact, as it meets him halfway. Look it over—it could easily be the car you've had in mind for a long time. •

Outfit Treasure Hunters

[*Continued from page* 89]

the Explorer. The directional receiver locates the metal by detecting the induced electromagnetic field as a buzzing in the headphones and a visual indicator meter reading. A handle, or handles, depending on the detector model, is provided to connect the transmitter and receiver. The transmitter is always carried behind and the receiver in front of the operator.

The buzzing of Fisher detectors throughout the world has turned up a variety of items besides gold and silver. The Strategic Air Command uses them overseas to find good runway locations. Bedrock vital as a base to support the enormous planes contains small quantities of ore which the detectors pick up.

A geologist member of a government mission to Taiwan located a small fortune in critically-needed steel rails that had been lost amid river gravels during a typhoon.

An expedition to Puerto Rico found a cave containing more than 3000 cases of Scotch and brandy. Used as a storage place by rum runners, the cave had been dynamited shut by a Coast Guard patrol in 1933. Submachine guns that had been sealed in with the liquor aroused the detector.

Uses to which the detectors have been put illustrate man's boundless ingenuity. To locate coins, jewelry, and ornaments lost in the sand, a modern beachcomber uses one each evening during the summer on a large West Coast public beach. Rewards for his findings enable him to live comfortably. Civil War historians use them to find metal unit insignia, thereby pinpointing the exact positions of Northern and Southern troops on the battlefields. Not long ago, San Francisco police used a detector to help find the life savings of an eccentric recluse who'd forgotten where he'd buried them.

A prominent corporation attorney—descendant of a once-wealthy Southern family—owes his present position to a detector. "Just before Sherman's troops entered Atlanta," his great-grandmother told him, "my mother buried the silverware. Mother died so soon afterward, though, that I never learned where it was hidden." Desperate for money, the young heir borrowed a detector from a friend, and searched the grounds that had once surrounded the family mansion. He found the silverware, and funds obtained from its sale paid his law school tuition.

Andrew C. SoRelle, a Houston oil man, is using the Fishers' detectors to search for the legendary treasure of the pirate, Jean LaFitte. In 1816, the story goes, LaFitte was having gold and silver worth two million dollars hauled to St. Louis when, just north of Carthage, Texas, the wagons were intercepted by Spanish lancers. The lead driver, followed by the others, drove at full speed into a nearby strip of water known as Hendrick's Lake. The lancers killed every man in the party, but did not bother the submerged wagons. A few weeks ago, one of SoRelle's workers discovered a wagon tire. SoRelle now plans to drain the lake.

Most of the Fishers' detectors are sold on the installment plan. Less than two per cent of the buyers fail to keep up their payments. As a result, Curt sometimes has financed guys with fabulous tales but no money. Not long ago, a dirty, bearded character got off a freight in Palo Alto. "I know where there's a fortune to be found," he told Curt. "I'm broke, but I need a detector and a grubstake."

Three months later a Cadillac pulled up in front of Curt's office and a well-dressed man stepped out. He handed Curt an envelope, then returned to his car. Inside the envelope was cash in excess of the amount owed, and a piece of paper on which was written the single word "Thanks."

Another treasure hunter walked into the laboratory one day with a large tarnished, copper kettle. He told Curt he

wanted to split a find he'd made. "Heard you were going to search a certain spot with one of your detectors, so I beat you to it," he said.

"You're talking to the wrong person," Curt said. "I'm not the one you heard about."

"Well," said the man, "in that case, I'll keep everything." Then he added, "But you can have the pot."

The incident did not depress the Fisher brothers, who feel that as long as men have good reason for hunting treasure, Fisher detectors will be in demand. The word "men" is the right one—treasure hunting is an all-male game, in the Fishers' experience. Women, they say, go after treasures men have already found. •

Learn How To Get Lost

[*Continued from page* 90]

counts. Prepare yourself and you can handle any mishap in a routine manner. Here's how to get ready to get lost.

First learn how to read a topographical map and how to use a compass (see Sept. '60 MI). Assemble all necessary survival equipment into one high-quality, small, compact and easily-carried kit. This kit should contain as its most important item a compass with the needle having an arrow plainly marked with a large "N" to designate north and a round or square end for south.

Other essentials are: six fresh chocolate bars; large white or yellow handkerchiefs —both colors can be seen great distances; 20 feet of white nylon cord; package of flat red or yellow toilet paper—white could get you shot during hunting season; large plastic bag or shower curtain to keep things dry, serve as a shelter or catch rain water; kitchen matches in two separate waterproof containers; small flashlight with fresh batteries, extra bulb; $10 bill in waterproof envelope; pencil and paper; piece of white chalk; police whistle; antiseptic; six Band-aids; small hand ax in sheath; fish hooks in trout, bass and pike sizes; two sinkers; fishing spoon for pike; aluminum foil in 18-inch squares; bottle

[*Continued on next page*]

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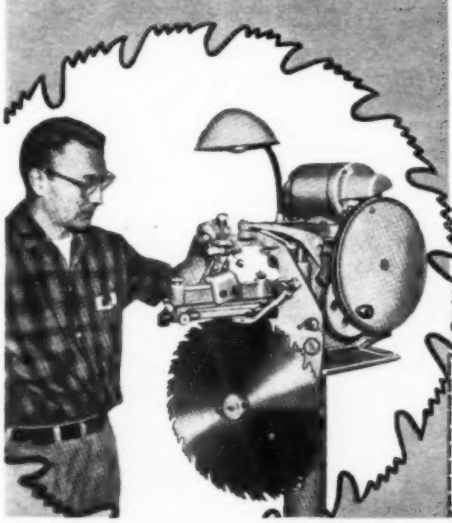

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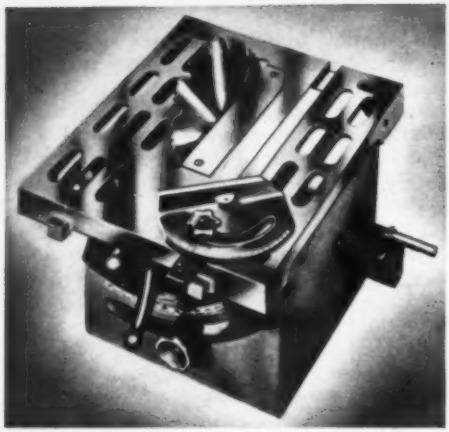

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of fresh bouillon cubes; tube of "Fire Easy"; bottles of Halazone tablets or other water purifier; small magnifying glass; bright metal mirror for signaling; good hunting knife and sheath; waterproof plastic envelope; 20 feet of fishing line; insect repellent; roll of mosquito netting. All of these items can be packed into a remarkably small package.

You should also know how to make a fire without matches when the sun is shining, with a magnifying glass; when the sun is not shining, by Boy Scout methods. See the Boy Scout handbook.

Further preparation: Learn how to build and set deadfalls and snares for small game. Nearly every public library has books on the subject. Check your clothing. Replace any worn or rotten cloth or boots. Make sure boots and socks actually fit. A blister from a too tight or too loose boot can have serious results. Weeks before you start your trip, write to the U. S. Geological Survey, Washington 25, D. C. for a quadrangle map of the area you plan to enter. Then study it carefully. Maps are drawn to scale and show brooks, swamps, ponds, mines, ranger stations, roads and houses. Also note the high lands. On arrival contact the local ranger or game warden and get all the information he can give you about the country. Make a rule that neither you nor any member of your family ever steps away from car or camp without a map, compass and survival kit.

The minute you discover that you are lost, sit down. Relax. Light up a smoke or eat a chocolate bar or do both. Don't drink even a small amount of any alcoholic beverage. This increases the danger of frost bite and freezing to death, numbs your senses and encourages panicking. Resist every urge to run, walk or move.

Look for shelter right where you are. This is very important. Don't put it off, even if it is morning, and don't go wandering around looking for shelter. Fallen trees, caves, boughs of evergreens, even deep snow drifts offer excellent shelter against wind and cold.

Look for water. A healthy person can get along for several days without food but he must have shelter and water. If you can't locate water within 1,000 yards of where you became lost, use your shower curtain to catch rain or heavy dew. Game

trails usually lead to water. But if you follow one, don't start until morning, then be sure to blaze your own trail with your ax so you can find your way back to your shelter. Use your water purifier when you find a spring or stream.

Make rescue signals. According to statistics, most lost persons who are found quickly are those who know how to use signals and lose no time in making them properly. Here is how you do it:

Unless the woods are tinder dry, clear away three circles 100 yards apart and at least 10 feet in diameter. In the center of each, build a small hot fire of dry wood and add green or wet fuel for smoke. If it is windy or the woods are dry, don't build a fire.

If you are hunting, as soon as the three columns of smoke are rising skyward, fire three shots, each spaced exactly one minute, by your watch, from the other. This is the lost signal in any woods.

If you can't build a fire, get to a clearing, long shore line or road and wait for a rescue plane. Wave your largest and most colorful piece of clothing when it passes overhead.

If no open area is available, climb the tallest tree and signal from the highest point you can reach safely.

In snow (unless in dense woods) make letters in the snow at least 30 feet long, spelling S. O. S.—LOST. If snow is less than 12 inches deep (to make shadows) clear snow off the ground making dark letters on white background.

When an aircraft flies overhead, hurry to clearing and wave anything you can that contrasts to the ground. Wave it horizontally, not up and down. Flying wardens and bush pilots often signal to lost persons and indicate the way to help. First they wag their wings to let you know they have seen you and understand the problem. Then they fly off in a direction and return. Again they wig-wag their wings and fly off. Wave back that you understand. Then, get whatever equipment you need and take the direction signaled for you to take. Sooner or later you'll reach help.

Search for food. You don't know how long you'll be in the woods. You'll need food. If you have a gun, look for birds, rabbits and other animals. If near a stream

[*Continued on next page*]

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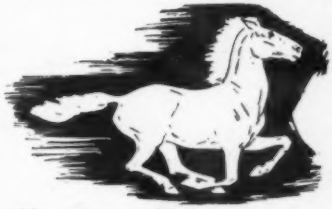

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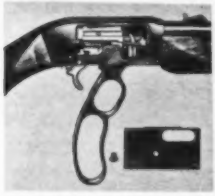

Action open. Side plate removed. Note simplicity of mechanism and ease of access for cleaning.

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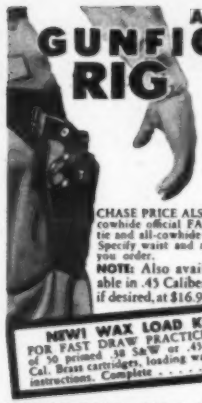

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or lake, set night lines. Bait with worms, grubs found in rotten logs, salamanders, grasshoppers or crickets. If in winter, fish through ice. A spoon jigged up and down will take fish. Many fish can be caught in spring, summer and fall by wrapping a small piece of colored yarn from a sweater or other clothing around a hook and fishing it in fast water. Use a live sapling for a pole. If large fish are in the water, such as bass or northern pike, cut a piece of cloth about two inches long and half an inch wide. Put this on the hook so it will wriggle in the water.

Conserve energy. Get all the rest you can. Don't hesitate to sleep even if the weather is very cold. You'll wake up before you'll freeze in any climate where the temperature stays above 25 below zero.

Blaze trails from your shelter in all directions like spokes in a wheel for at least 1,000 yards. Then when you venture forth for food or water, always follow one of these trails. If you go further, blaze your trail.

Take care of wounds. Blisters, scratches, cuts and bites may result in infections unless sterilized immediately.

Preparing now to get lost is good, cheap life insurance for you and your family. •

This Will Tickle You

[*Continued from page* 93]

CHINESE tortured victims by putting honey on their soles, letting animals lick it off.

searchers indicate they believe tickling is actually a combination of touch, pain and warmth. Some authorities believe ticklishness may be a specific sense, distinct from pressure, with its own nerve endings.

Still others, like the naturalist Charles

Darwin, have stated that surprise or novelty is the all-important factor to a tickle and thus reduce it to an emotion because the most ticklish areas are parts of the body not normally touched. Many persons —babies are a good example—are tickled by a mere gesture when another person pretends he's going to tickle them.

Where are we most ticklish? Researchers once compiled a box score of the most ticklish parts of the body. Almost everyone was found to be ticklish on the soles of the feet. Here, in order of sensitivity, are other ticklish parts of the body.

Under the arms, back of the neck, under chin, waist and ribs, cheeks, knee, down the back, behind the ears, palms, corner of mouth, breast, nose, legs, elbows and lips.

Investigators have also turned up some strange reactions to tickles. Some persons, adult as well as children, burst into hysterical laughter and scream when they are touched. Many others are tickled when someone whispers in their ear.

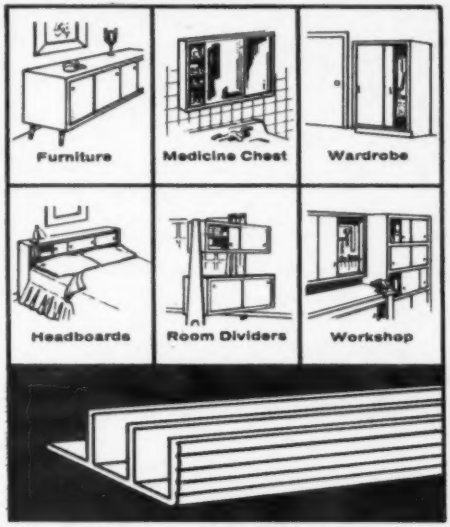
The famous Hollywood star, Douglas Fairbanks, Sr., often took advantage of ticklish situations. He disconcerted his fellow players with his tickles and drove directors wild by ruining many a scene. Finally, no one would let Fairbanks get within ten feet, so he took to hiding behind props and operating stealthily with a long fishing-rod, with or without a feather as the specific target required. Fairbanks was only cured of his habit by threats of heavy fines from the front office.

Many of history's greats have been addicted to tickling. Robert E. Lee loved to have his children tickle his feet and refused to tell them bedtime stories until they did. Silent Cal Coolidge, often described as a man who never smiled, had an insatiable appetite for tickling pranks. He specialized on Secret Service men. His favorite trick was at public functions where an unfortunate agent would have to park himself directly in front of Coolidge to watch the audience. Dour-faced as ever, Cal would keep poking a paper into the agent's neck while the man tried to avoid going into hysterics.

When you are in a bad mood, have a headache or are worried about important matters, you are much more difficult to tickle. In fact, many persons can steel

[*Continued on next page*]

6 do-it-yourself ideas



with Reynolds Aluminum sliding door track

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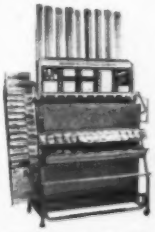

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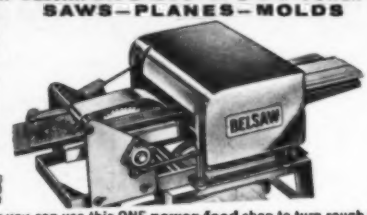

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themselves against a playful tickle when they wish.

Why has nature made us ticklish? Actually, it's nature's way of helping man survive. The areas that are most susceptible to a tickle are around the neck and throat, the ribs and under the arms—places where a sharp, sudden blow can do quick and fatal damage.

Nature has purposely given us an exaggerated sensitivity in those areas which in a real struggle we must defend. We are thus instructed in the art of self-defense through ticklishness.

The gyrations of a person fighting off a tickle reminds some scientists of a fencer's movements. An old meaning of "to pink" is "to stab with a sword." Thus the saying, "tickled pink" has the same double meaning as tickled to death.

There is, incidentally, no truth to the belief that tickling a child of less than one year will cause him to become a stutterer; there is no danger in tickling children unless it is carried to extremes. But once ticklish, always ticklish. Adults are usually just as ticklish as children. Surveys indicate that women are slightly more ticklish than men.

Ticklishness thus does have one other important value. A gentleman may not be able to tickle a certain lady *all* the time but he should be able to do so *some* of the time. If he gets no response *any* of the time, it doesn't mean the lady isn't ticklish. She's probably more bored to death than tickled pink to have him around! •

Beam Will Change Life

[*Continued from page* 99]

bard the container first, and it's as odor-free as glass.

A plastic water pipe nearing production is cheap, easy to install, will handle the hottest water—or even hot acid—and last a lifetime. When wood which has been soaked in a plastic solution is run under the beam, the electrons graft the plastic molecules to the wood molecules, producing an extremely tough product that looks like ordinary finished wood. You will some day buy scar-proof, scratch-proof, burn-proof wooden furniture.

Within a few years, your supermarket

will offer year-round, plump, succulent strawberries, peaches and other out-of-season fruits and vegetables—at bargain prices. Dozens of research projects in many countries have proved that the shelf-life of fruits and vegetables can be increased five times by a light dose of electrons.

Perhaps even more important is what radiation preservation will mean to the world's hungry millions. Meats, fish, and other important foods are virtually unknown in many regions of the world where refrigeration is unavailable. With large-scale preservation plants in operation, perishable foods could be shipped, stored, and distributed, all without refrigeration.

How soon will food be radiation-preserved on a large scale? New York's Chase Manhattan Bank, which backs its opinions with hard cash for research and development projects, says "within ten years."

Meanwhile, Russians and Poles are already eating irradiated potatoes and onions which can be stored almost indefinitely. Great Britain has launched a massive radiation program to treat eggs and other products and Venezuela and the Dominican Republic are eyeing the possibility of giving the ailing banana industry a boost with electron-beam preserving.

The electron beam generator is a direct descendant of the atom-smasher invented by Ernest Lawrence at the University of California in 1929. Lawrence's first cyclotron has spawned a hearty brood of *particle accelerators*—synchrotrons, betatrons, electron beam generators, and others. The main difference between the electron beam generator and its more famous cousins is similar to the difference between an air rifle and a battleship's 16-inch gun.

The electron beam generators use an ammunition weighing only 1/2000th as much as the atom-smasher's proton bullet. Instead of annihilating the atoms and molecules they hit, the electrons simply push them around into new shapes and combinations.

The first commercially successful electron beam generator was built by Dr. Robert Van de Graaff for the Navy during

[*Continued on page* 169]

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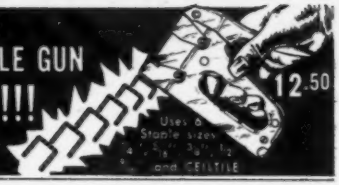

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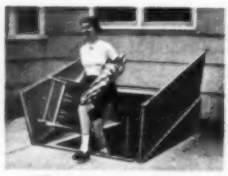

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World War II. After the war, he and his associates founded High Voltage Engineering Corporation in Cambridge, Mass., to build the machines for civilian use. HVEC is still the leader in the field.

For firms who want to try out electron beam processing without going to the expense of buying a machine, HVEC, GE, and others have set up experimental processing facilities. They are booked ahead for months.

So competitive is the search for new radiation products that most companies shroud their research in secrecy. Some bring in sealed packages and have them treated without revealing their contents. Almost all research programs—of which hundreds are being pushed ahead—are hush-hush.

Many useful radiation processes are being held up because they are still relatively expensive. But the cost is coming down rapidly. A kilowatt-hour of radiation energy a year ago cost about $8. Now Applied Radiation Corporation says its L-Band accelerator will do the same thing for $2.40. Arthur D. Little Co. of Cambridge, Mass., after a survey, predicted that high-powered installations would soon grind out electrons at a dime per kwh.

Radiation has been used to make insecticides and detergents and to anodize aluminum, waterproof shoe leather, ripen tomatoes, age wine and smoke cheese. It can static-proof plastics—to give you dust-free phonograph records—and, one researcher claims, turn cheap, yellowish diamonds into valuable blue-green gems.

There are uses for the electron beam generator outside of processing, too—right out of the earth's atmosphere, in fact. Goodrich-High Voltage Astronautics, Inc., a company devoted to the search for a space ship drive, is developing a particle generator that will be mounted in the tail of a space ship so that the particles shot backwards will kick the ship ahead.

Apparently the sky's no limit for the miracle-working electron beam. •

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CRITERION CO., Dept. BML-80, 331 Church St., Hartford, Conn.

Money With Your Camera

[*Continued from page* 142]

employment, I volunteered to provide progress photographs. Since nobody seemed sure of exactly what was needed, I went ahead on my own and produced some samples, quoting my low prices. The company, the contractor, the consulting engineers and the architect all bought prints and I've been doing the company's photographic work ever since.

Every time I spot a new home or a garden that's well cared for, I have a target for my camera. All I need is a sunny day and a yellow filter and it isn't likely that I'll miss many sales at $2 for an 8x10 print in a cardboard mount. I don't overlook real estate brokers, either. These people have a continuing need for photographs they must show to prospective buyers.

Just recently, a friend began to build a boat in his garage. He asked me to take an occasional picture so that he could have a record of what he had done. I've gone one better. Pictures taken at frequent intervals will provide a complete how-to story as well as some single pictures that can be sold as tips on boatbuilding. Wherever there's a hobby, there's opportunity for sales to the individual, the equipment manufacturer or an interested publication. That's how I sold this story to MI. I just sent it in with text and captioned photographs, asking if there was any interest.

Children can provide endless possibilities for money-making pictures. I wrap up all the possibilities by starting the week the child is born and returning at regular intervals. He's photographed when he first sits, crawls, stands, walks and blinks at the candle on his birthday cake. There's a continuing record for the family album and extra prints are always ordered by proud aunts and grandparents.

No matter what pictures I take, I find that people generally want the same type I have in my own family album. I don't get too arty; straightforward, properly-exposed and snappily-printed shots of everyday activities provide a record of family growth and are a pretty sure bet for profitable sales.

. . . Excuse me . . . My wife's calling me to the phone . . . Someone wants a picture taken. •

Rugs and Carpets

[*Continued from page* 155]

a paint store, working the liquid in with a small stick.

2. A tablespoon of neutral synthetic detergent in a pint of warm water, a few drops at a time.

3. Plain lukewarm water.

4. Two tablespoonsful of household ammonia and a tablespoon of neutral synthetic detergent in a pint of warm water; apply a few drops at a time.

5. A half cup of white vinegar mixed with a half cup of water.

6. Patented ink removers, but test lightly on the carpet dyes to be sure it doesn't remove them, too.

Urine, from pets or children, should be sponged thoroughly with water and blotted up quickly, then sponged with a detergent solution. If dried, the spot may require a half cup of white vinegar to a half cup of warm water. Saturate it, let it stand for a few minutes, then blot it up and repeat.

Blood stains should be sponged with clear water, then a neutral detergent used, followed by dry cleaning.

And as for that much bandied around word, "broadloom" it merely refers to any carpet woven or tufted on a *broad* loom. The maximum size loom used by all carpet manufacturers is 15 feet in width. While theoretically a carpet can be woven in an endless *length*, carpets are generally supplied to dealers in 50-foot rolls. The dealer, however, does have a choice of ordering them in 9, 12, and 15-foot widths. The Bigelow Carpet Company also weaves rugs and carpets in in-between sizes in addition to the standard 9, 12, and 15-foot widths. The two extra sizes they manufacture are the 10½ and 13-foot widths. All of which means that you can now get rugs and carpets to fit practically every room in the house except circular ones or those that are highly irregular.

Rugs and carpets aren't difficult to maintain if you use common sense, vacuum them regularly, shield them from sustained periods of bright sunlight and get rid of spots promptly. Respect them and take reasonable care of them and they'll give you many years of good, satisfying service. •

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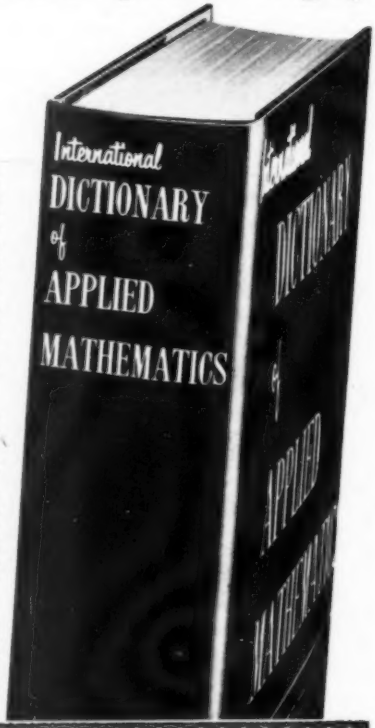

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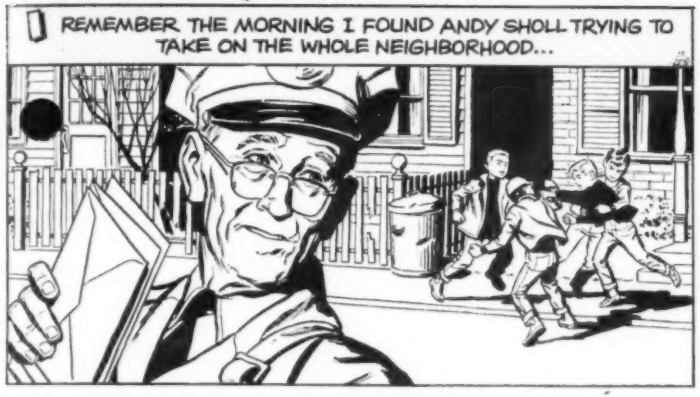

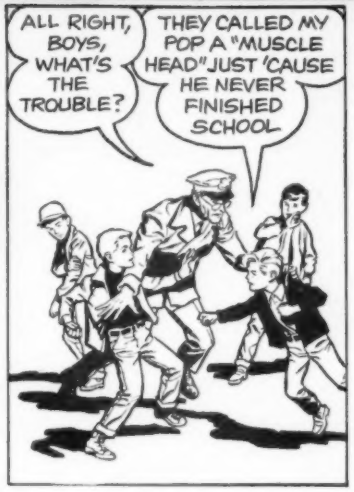

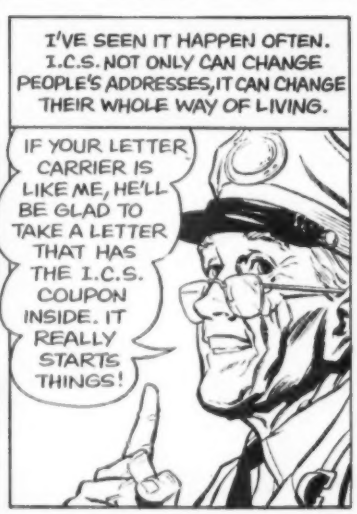

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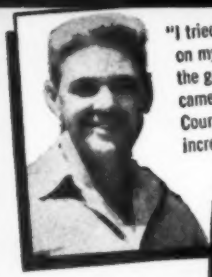

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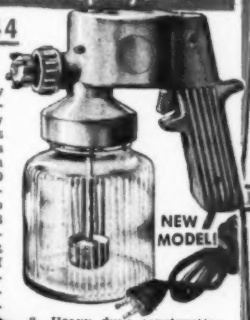

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